

VOL. LX

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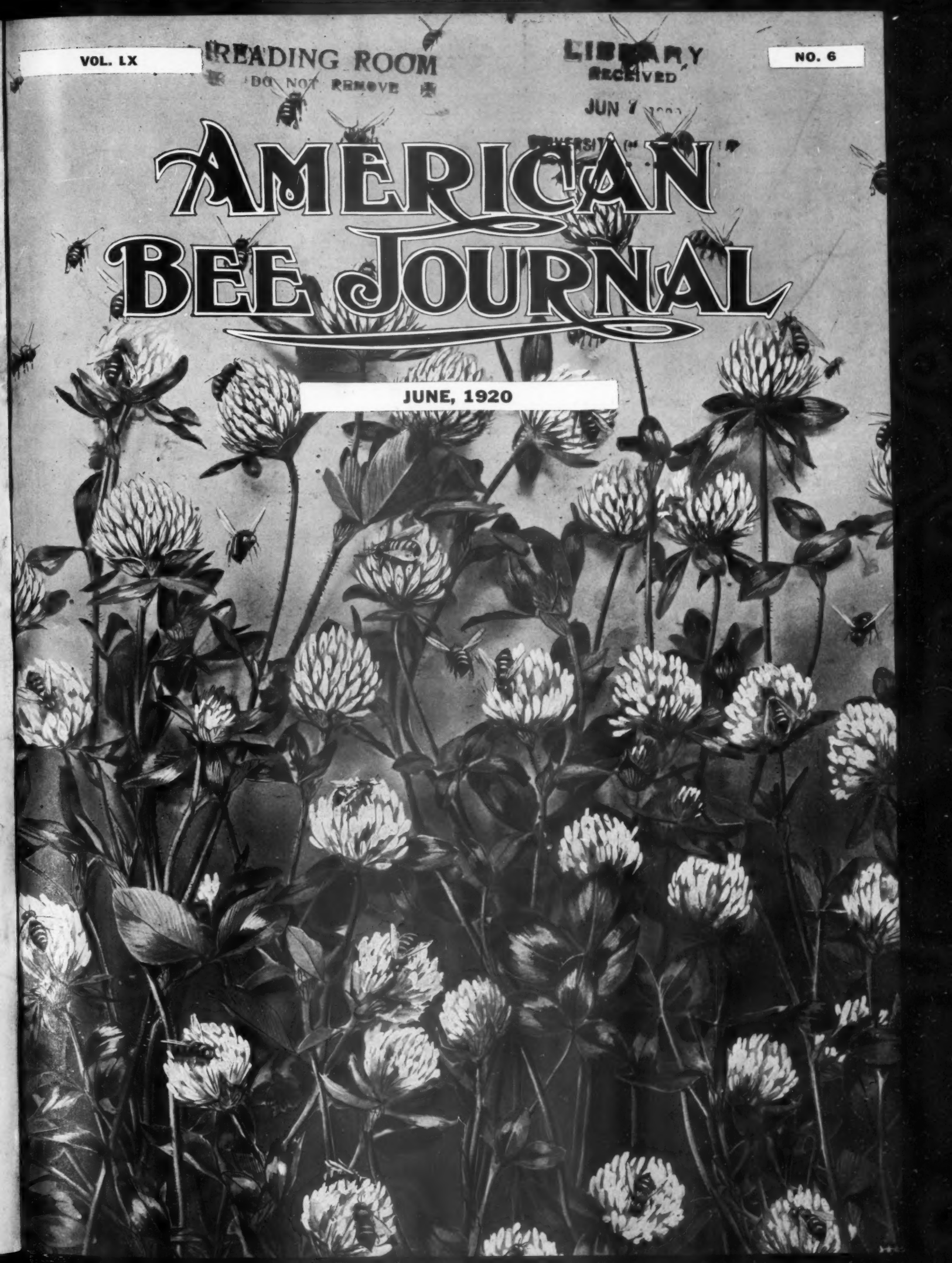
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AMERICAN BEE JOURNAL

JUNE, 1920



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Did you read Prof. H. F. Wilson's write-up in Gleanings, March issue, in regard to the packages of bees and queens he received from me last year? Notice he said some of those packages of bees and queens received in May gathered 150 pounds of honey. That speaks for itself in regard to the quality of my **Queens**. The 2-pound packages of bees and queens I shipped Mr. David Running in 1917 gathered 140 pounds of honey (He was then President of the National Beekeepers' Association). Have booked all the orders I can guarantee shipping on time for April, but send for **Free Circular** for later shipping, which states our guarantee; also gives prices on bees by parcel post, nuclei, etc., 3-banded and Golden queens. Have secured the best queen men obtainable, and we are prepared to turn out 6,000 **Queens** per month. They do nothing but take pains in rearing the best of queens. Careful inspection before shipping. Have an entirely separate crew for shipping bees, etc.; 20 years a beekeeper.

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Add price of queen when ordering bees.

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Untested \$1.50 each, 25 or more \$1.35

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They had some 300 colonies of bees in four apiaries and were very desirous of manufacturing foundation that would satisfy their bees as well as themselves.

Father and son did the work themselves, in an old log house, or if weather permitted, in the shade of a small oak sapling just north of the house.



The little oak sapling under which Dadant's Foundation was first made is now 3 feet through. The little flat top room at the right was the first Dadant Foundation factory

There were other beekeepers, just as anxious as they to get good comb foundation and the first year, besides supplying their own needs the Dadants sold 500 pounds. Thus for the first time **Dadant's Foundation** was placed on the market.

The little oak sapling grew as did their foundation business. The second year they sold 2000 pounds of **Dadant's Foundation** and had to hire some help. All of the wax rendering was done by the elder Dadant who took great pains to do a neat job, and retain in the beeswax the odor of the hive, the bees, of the honey.

The shade of the little oak sapling no longer sufficed, their first wax melting room was soon outgrown for **Dadant's Foundation** was being built on a firm basis, like the oak, and was to see a corresponding growth.

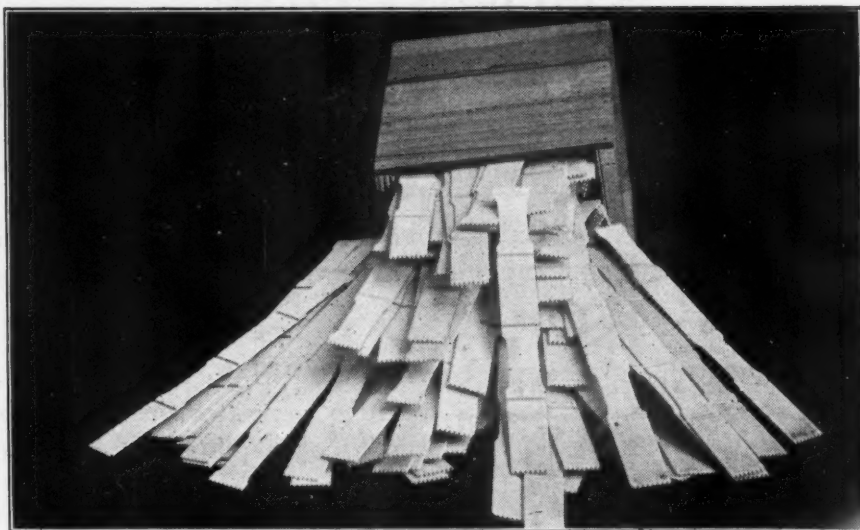
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MAKERS OF BEEWARE



VOL. LX—NO. 6

HAMILTON, ILL., JUNE, 1920

MONTHLY, \$1.00 A YEAR

SELECTION OF BREEDING QUEENS

BY C. C. MILLER

IN the American Bee Journal for July, 1919, page 244, and in September, 1919, page 310, some discussion is given to the matter of selecting best queens as breeders. The beginner who wants to improve his stock by breeding from the best is supposed to have given a careful reading to those two articles, and to have kept a careful record of every pound of honey taken from each colony, as also of each frame of brood taken or given, provided brood is thus taken or given for the purpose of equalizing colonies. He may also have kept track of the killing of queen-cells.

The thing to do now is to assemble the items in a table something like the one that follows:

No. of Col'y	Queen	Brood Taken or Given	Cells Killed	Lbs. Ho'y	Col. 6
1	18	g2	Keg	88	65
2	18	t1	Kc. Kc.	100	100
3	19	g3	Keg Keg	110	
4	18 Hybrid		Kc.	105	
5	17	t2	Kc.	120	135
6	18		Noc.	130	130
7	19	g1	Kc. Keg	112	
8	18	t3	Keg Keg	120	144
9	19	g1	Keg Kc	73	
10	19	g2	Keg Kc.	80	
11	17		Noc.	122	122
12	18	t2	Kc. Kc.	108	115
13	18		Kc. Kc. Kc.	87	72
14	19	g3	Noc.	90	
15	19	t1	Noc.	70	
16	19	g1	Kc.	104	
17	18		Noc.	124	124
18	18 Cross	g1	Kc.	90	
19	19		Kc.	86	
20	18	t2	Noc.	110	130
21	18	t2	Keg Keg	105	119
22	18	g1	Kc. Kc.	64	44
23	19		Noc.	100	
24	18	t1	Kc. Kc. Kc.	98	93
25	18	t3	Kc. Keg	132	154
26	19	g2	Kc.	84	
27	18	g1	Kc.	58	43
28	18		Kc. Kc.	76	66
29	19	t2	Kc.	105	
30	18	g1	Keg Keg	90	74

The number of each colony will be found in the first column.

In the second column will be found the date of the queen's birth, 17, 18, 19 standing, respectively, for 1917, 1918, 1919. In this column may also be found any peculiarity, such as being off color or temper, and in case of comb honey the appearance of sections with watery cappings.

The third column shows the number of brood, if any that are taken or given in equalizing. If one frame of brood is taken "t1" appears in the column, and if two or three are taken, then "t2" or "t3" appears. Similarly, if one, two or three brood are given to a colony, "G-", "g2" or "g3" appears.

In the fourth column "keg" means that eggs were destroyed in queen-cells at one visit, and "kc" means that

larvæ were destroyed. If eggs or larvæ were destroyed at subsequent visits, additional entries show it.

The fifth column shows the amount of surplus honey taken, and then comes the sixth column, the most interesting of all, made up from the fifth as modified by the third and fourth.

If a frame of brood is taken from a colony, it is counted that it will give 10 pounds less of honey, and if this brood be given to another colony its yield will be increased by 10 pounds. So, to make a fair game of give and take, if you take brood you must give honey, and if you give brood you must take honey. It is undesirable to have cells started for swarming; so, if "keg" is found in the fourth column it is counted the same as 3 pounds less of honey, and "kc" is as bad as 5 pounds less honey.

Colony No. 1 has given 88 pounds of surplus. But 2 frames of brood were given to it and, for each of these, 10 pounds of honey must be taken. Taking 20 pounds from 88 pounds leaves 68 pounds. No. 1 must also be penalized 3 pounds for the "keg" that appears, and taking 3 from 68 leaves 65 as the true rating of No. 1, which rating appears in column 6.

To get the rating of No. 2 we add 10 for the "t1" and deduct 10 for the "kc kc," leaving 100 as the rating.

When we come to colony No. 3 we find that the queen was born in 1919. The 110 pounds of surplus stored by the colony was probably due mostly to the worker progeny of her predecessor, and we shall not want to breed from the present queen, if ever, until a full year's crop stands to the credit of her worker progeny, so it is not worth while to put anything in column 6 for colony No. 3. The same may be said of No. 7 and the others that have 1917 queens. Neither would we want to breed from bees off color or temper, so we don't do any figuring on No. 4 or No. 18.

We are now ready to make a list of



Dr. Miller at home

our colonies in the order of their rating, beginning with the best:

1 No. 25 154	10 No. 2 100
2 No. 8 144	11 No. 24 93
3 No. 5 135	12 No. 30 74
4 No. 6 130	13 No. 13 72
5 No. 20 130	14 No. 28 66
6 No. 17 124	15 No. 1 65
7 No. 11 122	16 No. 22 44
8 No. 21 119	17 No. 27 43
9 No. 12 115	

This is by no means given as a perfect scheme. It may be that ten pounds is not the right number to count as the difference made by the taking or giving of a frame of brood. For that matter it is not a fixed quantity. It is no doubt more in a bumper year than in a year of failure. It need not be considered at all by one who does not practice equalization of colonies. The amount charged up for starting queen-cells is arbitrary, and some would consider it more serious, while others might consider it of little importance. Each one is at liberty to make improvements on the plan or to get up a better one. The likelihood, however, is that no great mistake will be made in breeding from No. 25, which stands at the head of the list, and if anything should happen to the queen of No. 25, then No. 8 should be taken to breed from, and so on down the list. Incidentally it might be mentioned that the queen of No. 27 would be a proper candidate for decapitation, as well as others near the bottom of the list.

The Evolution of Beekeeping Practice

BY G. S. DEMUTH

(Continued from May)

In December, 1885, at the Detroit convention, Mr. Heddon announced the new Heddon hive and his book, "Success in Bee Culture." The new Heddon hive was designed especially to meet the requirements of the contraction system. The length and width remained the same as the 8-frame Langstroth hive, but the depth of the frames was reduced to 5 $\frac{3}{4}$ in. in order to make eight of these shallow combs equivalent in capacity to five Langstroth frames. It was advised that two of these shallow brood-chambers be used during the six weeks preceding the honey flow for the strongest colonies, but at other times, the brood-chamber was contracted simply by removing one of them. Colonies not strong enough for two sections of the brood-chamber during the building-up period were to be left on the one.

Thus was accomplished the second step in the reduction of the size of the brood-chamber since the days of Langstroth and Quinby. The contractionists were using a hive much smaller than that of which Quinby wrote, as quoted above: "Very satisfactory for the first summer, but in a year or two your little hive is gone."

Mr. Hutchinson was so enthusiastic in regard to these new ideas in comb-honey production and so apt as a

teacher that he rapidly came to the front as a leader. He began the publication of "The Beekeepers' Review" in 1888, and the pages of the early volumes of this journal are replete with the new comb-honey methods. At that time each issue of "The Beekeepers' Review" was devoted to a special topic in beekeeping. The December, 1891 issue was devoted to the subject, "What Shall We Do if Poor Seasons Continue?" As was his practice, the editor wrote a "leader" for the preceding issue, part of which I quote: "In 1888 the average yield in my apiary was 10 pounds per colony. In 1889 it was 20 pounds, in 1890 not one pound, in 1891 5 pounds. * * * The honey stored in my apiary the past four years would not have kept us in food more than one year. I am forced to believe that hundreds of beekeepers could make a similar report." After some remarks about some changes in his location which had been brought about by better agriculture, he continued: "What puzzles me is that we had good crops for ten years, then poor crops for four years. It seems as though the change ought to have been more gradual."—(The Beekeepers' Review, Vol. 4, pp. 298-299). Ten years later Mr. Heddon told me, in person, in his own apiary, that he had given up all hope of securing another crop of Honey in Michigan, since there had been a series of poor seasons in his locality the past fifteen years.

Among the contributed articles on the remedy for poor seasons was one by R. L. Taylor, the closing paragraph of which follows: "I will close with the suggestion of one other possible remedy. In my home apiary the past season I had one swarm for about every twenty-five colonies, an average of about 5 pounds of comb-honey to the colony. But there was one colony that cast a swarm and gave a surplus of 75 pounds of comb-honey over and above sufficient winter stores for the two colonies. * * * There was no accession of bees from other colonies nor any robbing. Wherein was the power of this colony? Was it from the fortuitous con-

junction of conditions at the most favorable times so as to produce extraordinary exertion at the nick of time? Did it possess a secret knowledge of some rich acre of clover in a sunny nook? Or was it possessed of inbred characteristics which gave it power to excel? If in the first or last, as seems most likely, we have in them a rich field for explanation. He who finds out how to time the conjunction of conditions and to perpetuate the most desirable characteristics will abolish poor seasons, not simply find a doubtful remedy therefor."—(Beekeepers' Review, Vol. 4, p. 323). Taylor here uttered a prophecy well worth a most careful study by any beekeeper, and which in the light of our present knowledge helps to explain the series of poor seasons in the clover region and the decline in beekeeping in that splendid honey producing area.

I do not mean to infer that a reduction in the size of the brood-chambers was the sole cause of the poor crops secured at this time, but the reduction of the size of the hives certainly rendered the maintenance of the colonies in a prosperous condition much more difficult, especially during adverse seasons. The reduction of basswood and the growing importance of alsike clover made it necessary to have the colonies strong much earlier than was previously necessary when the colonies built up on white clover and secured a crop of surplus honey from basswood. That the failures were not so much the fault of the seasons as that of management is suggested by Mr. Taylor the very next year, 1892, as follows: "In the leanest of the late lean years every colony that cast a swarm as soon as the first opening of the white clover has given me more than an average amount of surplus comb-honey, and by that I mean more than an average in good seasons. For it has come to be a fond dream of mine that all reasonably good colonies having good queens can be brought to the swarming point by that time."—(The Beekeepers' Review, Vol. 5, p. 267). Here Taylor sees the possibilities of a "conjunction of conditions" designed



The divisible hive composed of shallow frames was advocated by Heddon, and for a time was quite popular. Beekeeping rapidly declined in Michigan after this hive came into general use.

by the beekeeper instead of the former "fortuitous conjunction of conditions."

Fortunately, the experiment in the repeated reduction in the size of the brood-chamber was not conducted without a check. Some beekeepers produced extracted honey throughout the comb-honey era, retaining the original brood-chamber capacity. The most prominent among the defenders of the large hive was Charles Dadant. In the early days of the movable comb hive he had adopted the Quinby hanging frame, but instead of using eight frames, as advised by Quinby, he built his hives to hold eleven frames. In 1874 he wrote: "For six or seven years I have tested the laying ability of my Italian queens. For this purpose all my hives destined to produce honey have been made with a capacity for eleven Quinby frames, or, if American, sixteen. * * * By the first of June three of my Quinby hives had between seventy and seventy-five thousand cells containing brood, while the best of my Americans had about ten thousand cells of brood less. Yet both kinds had equally young and prolific queens, the same pasture and the same care."—(Gleanings in Bee Culture, Vol. 2, p. 29). This amount of brood, as combs are ordinarily filled, would be twelve to fifteen Langstroth frames.

The Dadants, being producers of extracted honey, have continued the use of this hive. They fought consistently against the reduction in the size of the brood-chamber, which was brought about during the comb-honey era. From 1885 to 1899 the discussion of large vs. small hives continued, in which Charles Dadant and C. P. Dadant defended the large hives in opposition to the comb-honey producers. In 1895 A. N. Draper proposed a modification of the Dadant-Quinby hive, which is now known as the Jumbo hive. About this time E. R. Root was advocating the use of the two-story, eight-frame hive, since the eight-frame was then standard. As a result of all this discussion there began a tendency toward increasing the size of the brood-chamber.

During the comb-honey era many

improvements were made in hives and frames, practically all of which were comb-honey requirements. The thick top bars, self-spacing devices, as well as many other improvements, were designed especially for the comb-honey hive. Furthermore, a standardization of hives and frames used in this country was practically accomplished during this era.

The Second Extracted Honey Era

The Federal Pure Food Law was passed June 30, 1906, ushering in a new era in beekeeping. We are now in the early morning of the second era of extracted honey production which promises to be the brightest of the eras in American beekeeping. It is no longer necessary to sell with the honey the combs in which it was stored in order to convince the consumer of its purity, since, under the Federal pure food law and the pure food laws of the various States, this is now done by means of a label. Extracted honey production has increased by leaps and bounds since the passage of this law.

The new era of extracted honey production began after the beehive had been standardized and we have plunged into the midst of extracted honey production, using a hive designed for comb-honey production. In closing it may be well to mention at least one of the difficulties involved in using a comb-honey hive for extracted honey production: The ten-frame Langstroth brood-chamber is now admitted to be too small for the complete development of the colony previous to the honey flow; therefore, two brood-chambers must be used for brood-rearing at this time. If the second brood-chamber is given on top the queen usually goes into it, but often fails to go down again, thus abandoning the lower brood-chamber, the combs of which are partially filled with pollen as the brood emerges. When the second story is filled with brood and honey the queen may go into the next super above, abandoning both the first and second stories. In other words, no matter how many hive-bodies are used, the queen is often partially confined to but one of them

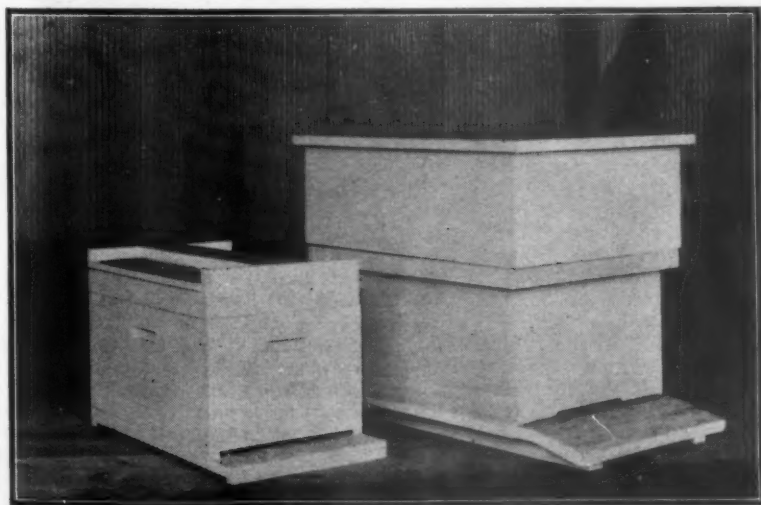
at a time, with a tendency to go upward into the supers, abandoning in turn each brood-chamber, if the queen excluder is not used. If in building up previous to the honey-flow a second hive body is placed below, the queen often fails to go down, and she may become sufficiently crowded for further brood-rearing room that a tendency to swarm is developed in the colony before the queen finds the combs below.

With the horizontal wiring of the frames it is difficult to overcome the stretching of the cells just below the top bar of the frame unless all of these cells are used for brood-rearing the first year, thus reinforcing the wax cells by means of the cocoons. When there is one or two inches of comb adjacent to the top bar that is unfit for brood-rearing on account of misshapen cells, we are asking too much of the queen if we expect her to pass freely both up and down, past spaces and sticks and finally across the imperfect comb to find cells in which to deposit eggs.

This trouble may be overcome to a large extent by carefully sorting the combs, using in the brood-chamber only those which are strengthened by cocoons to the top bar. Inverting the frames, the first year they are used, results in a reinforcement of the upper portion of the comb if brood is reared in them to the top bar, which is at the bottom when the frame is inverted. Some better method of wiring the frames may be developed by which sagging of combs may be overcome. Dr. Miller supports the foundation in his frames by means of wooden splints to overcome the tendency of the combs to sag. He also secures combs built down to the bottom bar by using wider foundation, which extends down between the two halves of a split bottom bar. He thus eliminates the barrier formed by the usual space between the comb and the bottom bar of the frame as well as the barrier formed by misshapen cells in the upper portion of the comb. He reports that his queens pass readily from one hive-body to another.

If the same sized frame is to be used for both the brood-chamber and extracting supers, the Langstroth depth is probably a fair compromise. Extracting combs deeper than the Langstroth would be objectionable in supering and in extracting, and brood combs shallower than the Langstroth would be objectionable from the standpoint of brood-rearing. Unless something can be done to overcome the tendency of combs to sag, as they usually do with horizontal wiring, beekeepers may again return to the deeper frame for the brood-chamber and use a brood-chamber large enough that a single story is sufficient, since in such hives the barrier formed by misshapen cells in the upper portion of the comb does not limit the activity of the queen, but may be utilized to the advantage of the beekeeper as an obstruction to check the tendency of the queen to enter the supers.

Washington, D. C.



The eight-frame Langstroth hive and Dadant hive compared

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.

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MAURICE G. DADANTBusiness Manager

THE EDITOR'S VIEWPOINT

Dr. Miller's health is better and he is going to reply to some questions himself. Bear in mind that he does not reply by mail to enquiries. Do not send questions which require too lengthy an answer. Before you ask a question, make sure that a similar question has not been already answered in the numbers of the Journal which you have.

Buying Package Bees

We have a letter from a reader who ordered packages of bees from a shipper in one State and queens from a breeder in another. Instructions were given as to the exact date of shipment, so that bees and queens were expected to arrive at the same time. The bees were shipped on the date specified, but the queen breeder wrote that because of unfavorable weather he was unable to send the queens. As a result the bees in the packages were almost a total loss. As the queen breeder had been notified in advance that package bees were to be shipped at this time he should have made an extra effort to fill the order to save loss to his customer.

However, this should serve as a warning to any beekeeper never to buy bees, without queens, unless certain in advance that he will be able to supply them on arrival of the packages. In case of this kind, the failure of either the package shipper or the queen breeder to fill his orders on time will result in loss, since neither bees nor queens are of use without one another. So many things can happen to prevent shipment of bees or queens on a certain date that the only safe way is to buy both from the same shipper, or be able to supply the lack at home. Bees travel more safely with queens, anyway. They are certainly better satisfied and less restless.

Don't Extract Too Closely

It looks now like sugar would be very scarce and high in price this year. It behooves every beekeeper to make sure that plenty of honey is left in every hive to last until the next season, before finishing extracting. The beekeeper who extracts and sells all the early honey and depends

upon a later flow to support his bees may find himself unable to get sugar to supply the lack of the flow that fails and lose his bees from starvation. **Don't extract too closely.**

Queen Introduction

The time is at hand when many beekeepers are ordering queens from breeders and preparing to introduce them. We wish to warn beginners against the practice of removing the old queen to be replaced, several days ahead. We received a complaint lately of a beginner who was very much disappointed because he had not received the queen ordered, at the exact date he had set. He had removed the old queen from his hive in anticipation of the arrival of the other. The bees had reared queen-cells. Of course that is what we should expect. Then they would be less likely to accept a new queen, since they realized fully that they were queenless. They would prefer to rear a queen from their brood, and we would have to wait till they were **hopelessly** queenless before they would willingly accept a new one. But if we remove the old queen immediately after receiving the one which is to take her place and put her in the introducing cage for an hour or two before making the exchange and putting the new one in, the bees are not queenless a single minute. They are more willing to accept the new one. The only thing that may militate against her is the possibility of her being so fatigued from the trip that she may be considered by the bees as losing her prolificness. That is why a queen, transferred from one hive to another will always be accepted more readily than a tired one which has been fatigued by travel, especially if the new one has acquired some strange odor.

Another advantage in keeping the old queen in the hive until the new one is at hand lies in the briefness of the suspension of laying. That is why the introduction by the smoke method would be very valuable if there were not so many failures in it. The cage method, with 24 to 48 hours of confinement, is the safest.

The introduction of queens during the honey crop and at hours when the

old bees are in the field is always more likely to be successful than introduction in a time of dearth, or in rainy weather, when all the bees, old and young, are at home.

Nothing, to our mind, is more dangerous than the presence of robbers around a hive in which a new queen has been introduced. It irritates the bees and causes them to mistrust every bee they meet. If the odor of the new queen is still a little strange to them, they are likely to treat her as a stranger. That is why practical beekeepers advise the beginner not to open the hive for 3 or 4 days after the queen has been introduced. After that time she has begun her laying and is looked upon with respect and tenderness. However if we should delay examination as long as 3 weeks, the new queen might have been killed and replaced by a young one and we would not know it, unless she had been clipped or bore some distinguishing marks.

The Honey Extractor Useless

In "L'Apiculteur" for April, a writer asserts, page 91, that experiments have "reduced to nothing the claim of the honey extractor to an increase of honey crop." This same man, a few years ago, in the same magazine, held that the use of the honey extractor was not practical. The thousands of American beekeepers who use this machine will be very much astonished at this amazing revelation! They will wonder whether this writer thinks himself practical.

Defending Themselves Against Robbers

Bertrand, in his "Conduite du Rucher," wrote, page 53: "The Italians and especially the Cyprians, defend themselves better than common bees against robbers; Carniolan bees are the least expert of all, it is their principal defect."

Queen Matings

"Current Opinion" for May has an article on "The Tribulations of the Queen Bee in Finding a Mate," with a very good cut of a comb of brood and honey. This is taken from "The New Statesman," of London, and gives some English views upon the subject. Technical articles, like this, in the magazine press, often contain gross inaccuracies. But this is a good statement.

There is, however, an assertion made that "if England is being turned into a land of cross-bred bees today, it is because the black drone is fastest on his wings." Has this been positively ascertained? Or does this English writer fail to take into account the much greater number of black drones in his vicinity than of the Italian or other foreign breed? Unless this has been actually tested—a rather difficult test—comparatively, I suggest that matings occur among queens and drones much farther apart than is ordinarily believed. In the early days of Italianization, here, some 50 years ago, I often found the black queens of farmers, 4 and 5 miles away, producing hybrids; showing plainly the range of flight of our Italian drones.

Utah Honey

The first annual report of the Inspector of Apiaries for the State of Utah, Mr. F. B. Terriberry, shows an estimated honey production for that State, in 1919, of 2,221,710 pounds from 37,627 colonies, or an average of over 59 pounds per colony.

Wintering Bees in Kansas

We have received a copy of Dr. Merrill's Notes on the Value of Winter Protection for Bees. The experiments made at the College on six hives are quite conclusive. The colonies were in single-story unpacked colonies, two-story unpacked, and packed colonies. Half were with windbreaks, the others without. The packed colonies consumed the most honey, but also reared the largest amount of brood and were in best shape in spring. The single-story unpacked hives consumed the least amount of stores, but were in the worst shape in spring. The conclusion is obvious that packed colonies, well sheltered and well supplied with food, bring the best results.

Another Use for Propolis

"Nahla," of Algiers, of March, 1920, quotes the following from "Petit Almanach des Abeilles":

"I used to wax my mustache—which is ordinarily hanging down—with a liquid sold in a small vial at the cost of 39 cents. What were the components of this liquid? A perfumed resin, dissolved in a little alcohol, as my brother beekeepers undoubtedly know. At present, I take some propolis, the odor of which is very pleasant to me, and which my bees furnish free of charge. I dissolve it in a fourth of a pint of good alcohol. I strain it and use it in lieu of the famous mastic. I obtain for 6 cents the value of \$2 of mustache wax.

The same magazine recommends, for the removal of propolis from the hands, the use of either turpentine, alcohol, benzine, petrol, or even Eau de Cologne.

Bulletins on Foulbrood

Three more bulletins have lately been published by the Department of Agriculture, of importance to beekeepers: "European Foulbrood," Bulletin No. 810, by Dr. G. F. White, with 8 plates, contains a very thorough description of the phases of the above named disease. A synopsis of this will be published in our columns soon.

"A Study of the Behavior of Bees in Colonies Affected by European Foulbrood," Bulletin No. 804, by Arnold P. Sturtevant specialist in bacteriology of bee diseases. He shows a number of experiments, and his conclusions are that European Foulbrood is mainly a disease of weak colonies. This tallies with the experience of practical beekeepers.

"Control of American Foulbrood," Farmers' Bulletin No. 1084, by Dr. E. F. Phillips, apiculturist in charge at the Bureau of Entomology. This is a 16-page bulletin which contains the most important things to be known on this disease by the specialist in

beekeeping. It shows the appearance of diseased combs and gives the best treatment so far known.

Each of these bulletins should be in the hands of the beekeeper who is interested in abolishing foulbrood. Let me repeat that I kept bees for 42 years before I saw a sample of foulbrood. There is no reason why we cannot get rid of these diseases so as to make them as rare as they were 30 years ago.

Minnesota Experiment Station

The management of the University Farm Apiary at St. Paul has undertaken the furnishing of choice queens in limited numbers to the beekeepers of the State. They now publish a circular announcing that the price of these queens is raised to \$1 for untested and \$1.50 for tested. They can send only a limited number, filling orders in rotation. These are, of course, much below cost.

The statement is made, also, that the winter losses in Minnesota are around 40 per cent, this year.

Weight of Bees

As far back as 150 years ago, experiments were already made on the weight of bees. Wildman (1770) writes:

"On the 9th of March, 1768, being a very cold day, I took some bees out of a hive and suffered them to fly to a window which so chilled them that they fell as dead. Of them I collected as many as weighed half an ounce, and found the number to be 154, which gives, to the pound, 4,928. I weighed another half ounce and found the number to be the same."

He also quotes another author who weighed dead bees and found 5,366 in a pound. The difference in weights was evidently due to the latter being dry and entirely deprived of honey.

The Metric System

The standardization of the metric system is strongly urged just now. But too few people know anything about its simplicity. On the contrary, most people think it very intricate. It would simplify our children's labor ninety per cent. Andrew Carnegie and Roosevelt urged it. Edison, Burbank, Ford and Pershing are all advising it. It is used by men of science everywhere. We need it in our dealings with South America.

The Dismal Swamp for Beekeeping

Having read in the Literary Digest a mention of the geological survey of the Dismal Swamp, with mention of its flora, we wrote the U. S. Geological Survey for a copy of the Bulletin. It was sent to us with a very courteous reply stating that the report was no longer available for distribution, but that they were sending us one of the few reserved copies.

The description of the flora of the Dismal Swamp is disappointingly brief. But it is sufficient to show that there may be some chances for bees in that vicinity. The trees and shrubs upon which bees could gather pollen

or honey, or both, are the following:

Water ash, Rattan (*Berchemia scandens*), yellow jessamine, cotton and water gum (*nyssa*), red maple and sweet bay (*Magnolia*).

Have any of our readers any knowledge of practical beekeeping in the vicinity of the Dismal Swamp?

The Bulletin in question treats mainly of the production of peat.

Franco-Belgian Funds

The Franco-Belgian Committee met in Paris early in April and ordered one-third of the supplies sent to Mr. Tombu at the Department of Agriculture of Brussels. The other two-thirds were ordered, one-half to Paris, the other half to Nancy, to be divided between the eastern and western regions.

Mr. Crepieux-Jamin, of Rouen, who is an active member of the committee, writes us:

"You may report to your committee, Drs. Miller and Phillips, that those subscriptions will give us the opportunity of doing much good. Say to them that we are very thankful. The distress in the devastated regions can hardly be conceived, for one cannot imagine such continuous masses of ruins, on such an extensive scale. You may have an idea of a part of it, but the total is overwhelming. It takes real courage to bear the sight of it and one is filled with admiration for the good people who struggle in those stony deserts, where the meanness of some human beings has destroyed everything. All that we may do is insignificant by the side of what will remain to be done; it will take 15 or 20 years to revive those regions, if they ever succeed. But the inhabitants do not lose heart, and they seem to have even more courage than the visitors. They want to live; they want to rebuild their homes; they deserve to be helped. I am very happy of having the privilege of adding ever so little to this rebuilding."

The above-named gentleman is too modest to speak of what he has already done. But the French and Belgian magazines report him as being the first civilian rewarded by the King of Belgium with the Order of Leopold, for services rendered. During the war he gave medical assistance to more than 3,000 wounded Belgian soldiers. Beekeepers may be proud of his being one of their number.

There is still more room for help. It is never too late to do good.

One lot of 56 smokers has been sent, also. Six of these were subscribed by J. W. Bittenbender, of Knoxville, Ia.

Space Between Combs

Cowan advises spacing frames "a shade under 1½ inches from the septum or middle of each pair of combs." (Page 26 of British Beekeeper's Guide Book). For wintering he spaces them farther. He writes:

"There should be sufficient bees to crowd eight frames, and these should be placed 1¾ inches from centre to centre, for the winter months . . ." (Page 181).

Perfect Wiring of Combs

By W. L. Gray

I take the smallest shoe-lace eyelets that can be obtained and place one in each hole of the end bars, driving it down with a hammer. First it is necessary to enlarge the holes some, which I do with brace and gimlet, holding five or six of the bars together and boring through them all at one operation, which lessens the work. If tight wires—wires that will stay tight indefinitely—will prevent sagging combs, then this way is all that is necessary; besides, it makes a very neat job. You will readily see that the wiring machine will do better work, also the wire will not bind nearly so much where it passes through the holes. The end bars can be sprung in and they stay in that position.

Might this not be the solution of this problem, if the manufacturers would devise a machine to insert the eyelets at the factory when the frames are made? I believe that extensive beekeepers would be willing to pay a little more for a frame like this.

I also think that a larger size wire than a No. 30 should be used, say one with twice the cross-sectional area, No. 27. This way, when using the wiring machine, faster work could be done, as it would not be necessary to be so careful about breaking wire.

Wisconsin.

(This method is similar to that described earlier by Deroy Taylor, of New York. There is no doubt that loose wires would be largely prevented by such eyelets and that, therefore, the sagging of foundation would be minimized. So far no manufacturer has seen fit to place such frames with eyelets in the side bars on the market.—Editor.)

Wiring Foundation

By J. B. Douglas

I have tried all kinds of wiring and find only one way suitable to the bees, just four straight wires, and they must be tight and stay tight. As soon as I found they would not stay tight I began to look into the cause and found that the wires cut into the wood.

I bought 12,000 shoe eyelets of the smallest size; they cost 4c per 10-frame hive. I drove these eyelets in

the holes already in the end bars; that is all there is to it. Wires never cut into the wood and never get loose any more, and the wires just run through the little eyelets like they were greased. What do you say, Dr. Miller?

Now there is another little kink. I use a wiring machine (of my own design) to crank the wire up tight. I pull the top wire down in the center. It is necessary to do this for two reasons; it forms a truss, and by pulling it down it takes all the slack out of the second wire. I next roll in the bottom wire; this time I draw it up in the center. That takes up the slack in wire No. 3. Also it takes all the buckling out of the foundation. Then I roll in wires 2 and 3, leaving them straight. **When wiring frames use shoe eyelets.** That is all there is to it. There has been many a page written about wiring and all that has been written did not tell as much as these six words.

Arizona.

Wiring

By A. F. Bonney

Having read about all that has been written on wiring which has appeared in the journals, I have yet another idea to offer which, while only a modification of other methods, has, I think, some redeeming features.

Is there anything in the many methods of wiring offered which will insure stability of the combs? If we use vertical wires, will not the combs, in a hot hive, be apt to slip on them, not much, to be sure, but one-sixteenth of an inch is enough to destroy a cell, or a row of them.

Where the wires are not vertical, but run obliquely across the frame there would be less danger of displacement, because such a wire will not sag as much as a wire running parallel, and this parallel wire is the one to be supported, and we give it but little help by putting in another (oblique) wire unattached to it.

I had in mind to solder the wires where they cross, which could be made a simple matter, by using a soft solder, something like the Wolf metal, a mixture of tin, lead and bismuth, which may be so combined as to melt at less than the boiling point of water—212 degrees. The soldering could be done by the aid of electricity, and

the job finished very quickly.

I think the plan I offer will insure the best of results, with the wires either soldered or left free. The wires (aaa) pass under the wires (bbb). In case of the first and, maybe the second wires, two such supports might be used, if necessary. I think it unlikely that the fourth wire from the top will need support. It will be easy to add one for experimental purposes.

Iowa.

Arrangement of Colonies in the Apiary

By the Editor

"Just how close to each other may one safely place a number of colonies? I have a number, and as my space is limited I want to place them close together. Is it also necessary that they all face the same direction? I believe that I have read that they should not be placed too close, but I have seen pictures of large apiaries where the ground seemed to be literally covered with hives."

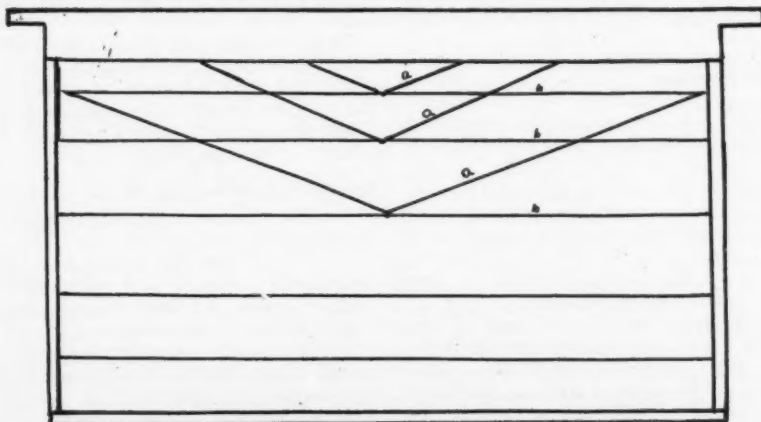
Missouri.

There are few points in beekeeping upon which leading and practical men agree so well and yet fail to follow the advice which they give. The placing of colonies in long, uniform rows is generally deprecated, because of the danger of losing the queens on their return from their wedding flight. Yet we follow this method more or less ourselves.

Mr. Langstroth wrote:

"If a traveler should be carried in a dark night, to a hotel in a strange city, and, on rising in the morning, should find the streets filled with buildings precisely like it, he would be able to return to his proper place only by previously ascertaining the number, or by counting the houses between it and the corner. Such a numbering faculty, however, was not given to the queen-bee; for who, in a state of nature, ever saw a dozen or more hollow trees or other places frequented by bees, standing close together, precisely alike in shape, size and color, with their entrances all facing the same way, and at exactly the same height from the ground?"

This criticism is correct, and more queens are lost, in a large apiary, from the young queen returning to the wrong hive, than in any other way. We often hear people who buy Italian queens saying that their bees are often seen in the wrong hive, and they imagine that the Italians make more mistakes of this kind than the common bee. This is not so. But we notice it more when Italian bees make their home in a hive of blacks. The young bees and the young queen, at their first flight, aim to recognize their home. But, as Mr. Langstroth suggests, they have not the faculty of counting the number of hives from a certain point, and so are in danger of entering the wrong hive. It matters little to the worker bees who, when they make a mistake, are likely to be welcome anyhow, if they come as friends with a loaded honey sac. But in the case of the young queen,



Another suggestion for wiring frames

if the hive she enters is queen-right, this mistake costs her her life.

In an apiary where the rows of hives are shaded by trees, where a bush here and there divides the flight, there is less danger of mistakes. Each colony takes its own direction of flight, to get out, from the shade into the open. Thus there is little danger of errors, especially if the hives be painted of various colors. Some say that this has no influence. Yet, if you remove the hive and transfer the bees into another of very different color, you will notice many bees hesitating, though they may come back directly to the identical spot.

It takes but little to enable a bee to orient itself, or in other words, to find its bearings. If two hives are placed in closer proximity than the others, this will direct the bees of both these hives and of their immediate neighbors. Mr. Scholl, of Texas, has a way to place the colonies in groups of five, not in regular rows, so that none of the bees need hesitate after once learning the location of their home. A stump, a shrub, a clump of grass, a slightly different roof to the hive, anything, in fact, which will enable the bees to see a difference, is usually sufficient to mark their home in their memory. The relative position of the hive in reference to other objects, is so well noticed by the bees, that the moving of it only a few inches is noticed by them. But in an open expanse, where there are no guiding marks whatever, a hive, if alone, may be moved several feet without its change of location being noticed by the bees.

A large apiary may be placed in a very small compass, without much loss of bees. I have seen about 160 colonies, in a model apiary at Maquoketa, Iowa, located on a space of ground which measured only about 50 by 65 feet. Most of the colonies faced south. But they were arranged in irregular rows, some being close together, some farther apart, two hives being generally placed very close together, with a greater space between them and the next. Long rows, with exactly uniform spacing, are most objectionable.

As to the directions in which the hives should face, we have faced them in all directions and have had good success in every direction but the north. It is better that the hives of each row should face in the same direction, if possible, as there is more comfort in handling the bees. When we pass in the apiary, we prefer to pass behind each row. If we pass in front, there is more danger of disturbing the bees or angering them. Two rows might be placed back to back with sufficient room between them to enable one to do all the manipulations. In that case we would face one row east, the other west. In apiaries located on a slope, we want the bees to face down the slope. It is easier to keep the hives level, and if they are not level they will slope forward, which is not objectionable.

We do not like to tier up the hives,

though we have seen this, often, in house apiaries, especially in Europe. Not that there is danger of the bees shifting from the upper to the lower row, but because the manipulations are much hindered, unless a passage for the apiarist be also made higher up, to readily reach the second row. In some parts of Switzerland and in Central Europe, they tier the hives two and three stories high. But they allow room for only one super for each tier. Those people have no idea of what a large crop of surplus honey represents, and we cannot imagine the harvesting of 200 pounds per colony with such a system.

Odor of Bees

I found the following interesting little article in the January number of *The Ladies' Home Journal*, and thought it might interest others:

"Recognizes Bees By Their Smell.—Dr. N. E. McIndoo, of the Smithsonian Institution, after a few months' practice, is able to recognize the three castes of bees—queens, drones and workers—with his nose alone. He is also able to distinguish the hive odor (distinguishing one colony from another), the brood odor, or smell of the larvæ, the honey odor, and the wax odor. He believes that the bees themselves recognize the odor of each individual bee, and that this is the way in which they tell one another apart in the dark hive."

I think Mr. McIndoo has a nose 50 times more sensitive than mine, or this is a fish story.

Iowa.

(Without doubt, each of the three kinds of bees has a special odor. Swammerdam wrote that if you enclose a number of drones in a small box they emit a strong odor, which he called "aura seminalis." He thought the queen was impregnated by this scent. The workers undoubt-

edly recognize the odor of the hive and the odor of their queen. But we have never tried to recognize whether a hive is queenright or queenless by the odor. It would require a nasal organ as powerful as that of a well-trained dog.—Editor.)

A Ford as a Wire Imbedder

Edward A. Winkler, of Illinois, rigged up a wire imbedder, using his Ford as a source of current. The picture shows him at work. He made two frame blocks on a box, using a half-inch board $7\frac{1}{2} \times 16\frac{1}{2}$ to support the foundation.

He took two insulated wires to furnish the current, connecting one to the terminal attached to the horn and the other to the engine. He ran the motor at a speed equal to about 20 miles per hour, using less than two gallons of gasoline for 1,000 frames. The current was applied by means of touching the two wires at opposite ends of the wires in the frames. By this means he was able to imbed as many as 210 frames in an hour. This draws heavily on the magneto of the car and it is sometimes necessary to use batteries to start the car for a time after using it as a wire imbedder. A few hours driving on the road soon recuperates it, however.

Mr. Winkler no longer uses the Ford, as he now has access to electric current.

Imperfect Mating of Queens

By Arthur C. Miller

Professor Anderson's remarks on "Imperfect Mating of Queens" (A. B. J. April, 1920), together with several by Mr. Sladen in *Gleanings* and the A. B. J., give food for thought and suggest that other experiment stations beside the Canadian one might devote some time and money to researches along this and kindred lines.



Edward A. Winkler using his Ford as a wire imbedder.

It is work that the average beekeeper has neither the time nor the training to successfully undertake.

Some experiences and observations of my own may be worth recording, though I do not pretend to have gone into the matter exhaustively, but even so, the facts may suggest other lines of observation for others to follow.

My "Home Yards" have always been on a narrow peninsula of land lying on the easterly side of Narragansett Bay. From 1880 till 1888 the yard was on the easterly side of the peninsula, from 1888 to 1891 it was on the westerly side, within 100 yards of the shore, from 1891 to 1910 on the easterly side again, and since then on the westerly side, about one-eighth of a mile from the shore.

During the summer months the prevailing winds are from the southwest and blow pretty strongly. There is no protection from the winds on the west shore, but a narrow and low ridge more or less tree-covered extends down the middle of the peninsula and gives fair protection to the east side. While my yards were on the east side there was little loss of queens in mating and "poor" queens, those which laid poorly or failed young, were rare. But on the west shore the loss of queens and poor queens always have run high. The results are about the same for large as for small nuclei.

Some years ago I discovered that some queens mated more than once before they began to lay. Observations of two matings were not infrequent, and on two or three occasions three matings were noted. In such cases the first mating usually occurred fairly early in the forenoon and the subsequent mating or matings before late afternoon. On the west side of the peninsula queens seldom fly after 1 o'clock, because the winds come in cold from the water and are strong.

In only one case can I speak positively of a queen mating the second time, on the day following the first mating. In that case the first mating took place late in the afternoon and the second one early the following forenoon.

From these observations I am led to believe that it is at least not uncommon for queens to mate more than once before they begin to lay. As further proof most beekeepers of any considerable experience can recall queens of pure parentage which produced two distinct types of workers, one typically pure and one distinctly different. Offspring from a crossing of pure parents of mixed blood are of all sorts.

Mr. Sladen's observations, as well as those of Professor Anderson and myself, seem to indicate that some drones are not virile, or that for some at present obscure reason one mating may not so fill the spermatheca as to bring to an end the mating impulse of the queen.

There is much difference of opinion as to how the drones find the queens, some asserting it is by odor, others that it is by sound, and I am among the latter, and I think I have good reasons for so believing, but I am ready to listen to all the others have to say.

Professor Anderson's remarks on drones recall some experiences which may properly be related in this article, namely, that drones "drift" with the wind and seldom fight against it. On the peninsula above referred to I have always known of every colony, its location and its strain. Whenever blacks or hybrids were southwest of my yards, mismatings were common, but when they have been north of my yards, mismating was rare. And this statement holds good where the alien stock has been nearly a mile southwest and as near as an eighth of a mile north. This, of course, at different times. Henry Alley always maintained that queens mated within a few rods of the hive they flew from.

What do we **know** about bees, anyway? The late Mr. E. E. Hasty used to delight in saying "Bees do nothing invariably."

Rhode Island.

A Deep Frame

Your recent deep brood-nest discussions in the Journal have interested me greatly. I wished to secure Na-

ture's ideal of a deep brood-chamber, while still employing my small Langstroth size extractor, supers, etc., and this is how I set about it: I made up 100 new frames of the usual Langstroth dimensions, but with the top bars placed at one of the ends instead of lengthwise, as now manufactured. This gave me a frame $8\frac{3}{4} \times 18\frac{1}{4}$ in. over all, with top bars $1 \times 1 \times 10$ in. long and having $1\frac{1}{2}$ in. spacing. In the center of a brood-chamber of standard Langstroth width and length and suitable depth I placed twelve of these frames, double walling and packing the unoccupied space on either side of the row of frames so that I could readily use any sort of Langstroth supers, etc., on top.

The first year everything was of 10-frame width, but not being strong physically, I gravitated by degrees into 8-frame equipment, where, so long as my present light changes not, I feel disposed to remain. I like the simplicity and success of my venture well. But now I should value not a little your friendly criticism of what I have done.

Ontario.

Answer—Judging by the diagram which accompanied the letter, the supers are to be placed horizontally over the top of the hive body, jutting out over the double-wall packed ends.

The combs standing on end are upon the idea given by Mr. Demuth, with the purpose of giving the bees a greater amount of honey over the cluster for winter. Probably the greatest objection that I would find to such a hive would be the possibility of the bees disliking to work in the jutting-over spaces at both ends.

Of course, I would not want to adopt this hive for my own use. But neither do I advise anyone to change from the style which he now uses, if he is successful. As to the man who is not satisfied with the style he has, it is for him and for his benefit that all these discussions are raised. Personally, all I wish is to answer the questions which are raised from time to time of how we succeed and why. With us, the theory follows the practice and does not precede it. It seems to us a much safer way than to have the theory first, and the practice afterwards.—C. P. D.

Florida Apiary Near Toulouse, France

To cast one's eyes over the picture of this apiary is enough to draw inferences which will not be to the advantage of the arrangement. Other defects, less evident on the photo (but I am well placed to know them), require an explanation.

First, its recent increase did not give me time to ascertain whether the number of colonies is too large, considering the importance of the crop. For a few years past, in the south of France, the harvest has been light. On an average, perhaps 40 colonies would be enough for this location. Yet, during a good honey flow, when the white locust—abundant here—is a success, the apiary could sustain 200 colonies without overstocking. But it



View of a French apiary

is prudent to reckon with middling years instead of exceeding ones.

Secondly, the apiary, notwithstanding its shelter from cold winds, is too much exposed to the *autan* or African sirocco, cooled sometimes in crossing the Mediterranean. Some years, particularly, it blows for 8 to 15 days continuously, obstructing the work of the bees.

Thirdly, the sun reaches the hives only till about 4 o'clock in the afternoon, as the slope is to the northeast. I have outapiaries in warmer expositions where the breeding is earlier by a month. Lateness is a great handicap, because our main flow comes by the 25th of May. There is also too little shade.

Another disadvantage is the variety of styles, though the majority are in Dadant hives. There is, however, a compensation to this, as it allows of more experiments.

The name of the apiary is after the French-Latin name of blossoms, not after a State of the United States.

You will ask why, with so many drawbacks, I do not attempt a reform. It is because, of several inconveniences I choose the least.

V. DUMAS.

Observing Hives

A Letter from the Ames Experiment Station

Mr. C. P. Dadant, Editor American Bee Journal, Hamilton Ill:

Dear Friend:

You may be interested to know that a one-frame observation hive in my office contains a little colony which bids fair to winter through. I left them there just to see what the result would be, little thinking that there would still be any bees left by the last of January. The colony lost two or three hundred bees along in December, at the time of the cold weather and coal shortage, when the temperature in the room got down close to freezing. They had a good flight the last of December and a fairly good one again today (Jan. 26). The queen started to lay about the 20th of December, but only a small fraction of the eggs hatched, as the proper temperature could not be maintained. About 50 or 75 young bees emerged. The queen has ceased laying and with the flight the bees had today, I see no reason why they should not live through. During the month of confinement just ended, hardly a bee died till within the last few days, when they became a little restless, and a total of 36 bees is the loss for the month. The colony now contains approximately 1,400 bees. I am hoping now to see them alive yet in May or June.

February 2.—I had scarcely considered this an experiment, but rather as a matter of interest to me personally. As it is turning out, the prospects are that data obtained will be of more than passing interest. Should the little colony fail to live till summer, it will not be any proof that such a colony could not be carried through the winter, for I am continually making use of this colony for other experimental purposes.

Since my last letter, the queen has resumed laying. This follows immediately the flight of the bees on January 26, and may have been influenced by this, but I believe it more likely due to disturbing the colony with my experiments about the same time.

Approximately one-fifth of the young bees that have hatched during cold weather are abnormally small. This is to be expected, since proper brood-rearing temperatures could not be maintained. I notice that the other workers take special delight in tormenting the little fellows and kill them in a few days, although, so far as I have noticed, they are deficient only in size.

I made a number of observation hives last summer. They are extremely simple in construction, and I find them very satisfactory. The price of the observation hives offered on the market is almost prohibitive to the average beekeeper. If you wish, I will try to supply you with an illustration and short description of this hive some time later on, but am too busy to do so now.

Yours truly,

WALLACE PARK.

(This is interesting, and we would be glad of an illustration and description. Too few beekeepers use observing hives.—Editor.)

Money From Bee Stings

On page 137 it appears that you have no knowledge that the formic acid of the bee is used for medical purposes. I have been furnishing bees for medical use for the last 15 years and have thought it was the formic acid they wanted. Now you find out. I am sending part of an envelope that gives you the firm's name and address, hoping you will write them. I ship to the Philadelphia address. Further, a homeopathic doctor here says he uses the formic acid in treating heart disease, dropsy and rheumatism. The way the bees are prepared, the bottles are two-gallon size, three-inch neck, no cork. One quart of alcohol in each, weighed and marked; bladder wet and stretched

over the top; four bottles at a time. I am not allowed to kill the bees, for sulphur or carbon would spoil them for medical use.

I empty the alcohol out and dry the bottle to put the live bees in; use a 15-inch funnel, 3-inch neck to fit the bottle, brush the bees off the combs in the funnel, strike it lightly and they slip in; or if it's a swarm I take from a limb, I get them in a sack, tie the sack over the neck of bottle, up-end the sack and shake them in. If the bottle should be half full I turn in half the alcohol. Next time I use a dry bottle, then empty in the other until full. The alcohol kills them in about a minute. Each bottle holds about 12 pounds of bees.

Now you are wondering why I kill my bees. I don't any more, only those I get from bee trees in the fall and late after-swarms that come my way. I keep bottles on hand, some now half full. I am a farmer, not a practical beekeeper; don't have time to do much with the bees; have kept them more than 30 years. At the time I commenced bottling bees I had over 60 colonies and was working them for comb honey. I used the "T" supers with the 4-piece sections; it was too much bee work for a busy farmer. I tried to sell at \$3.50 per colony first of October; no one to buy; took up about twenty; average 5 pounds of bees; got over 30 pounds of extracted honey and had the hives and combs left. Next year lost all but two colonies—foulbrood. Most all bees died in this part of the State that year, and but very few started again.

MICHIGAN.

In reply to our letter the Philadelphia firm answered as follows:

"The subject of using the poison of bees in medicine seems to become prominent in the regular medical journals every two or three years. Usually a number of articles are written telling what a wonderful remedy it is for rheumatism, and then it is forgotten. Medicine has been made from the honeybee since about 1757, and has been used by the homeopathic practitioners ever since that date. It is usually made from the



View of the home from the height of the apiary

whole live bee by macerating the bee in alcohol. The action of the remedy is chiefly on the kidneys and bladder. It has been used with success by the homeopaths in the treatment of rheumatism, dropsy, eczema and various affections of the mucous membrane. The homeopathic school of medicine also uses a preparation made from the sting of the honeybee. We buy both the honeybee and the stings for medicine. At the present time we need about 5,000 stings of the honeybees, and could use about 20 or 25 pounds of bees."

Straw Skeps of Bees From Central France to the Liberated Regions

I am sending you two photos of bees in skeps packed in sacks and shipped to the liberated regions. There are lots of bees in the mountains of Puy-De-Dome. But they are not yet posted on modern methods. I have sold a number of skeps at 100 francs each, prepaid (about \$6, at present values). But there is demand for more than we can supply. The trouble comes from the brimstoning of skeps by ignorant honey producers.

I will try and send you some photos of mountain apiaries by and by.

TOURAUD QUINTIEN,
Puy-De-Dome.

Bee and Queen Advertisements

By W. H. Gray

There is a great difference in the way people advertise their products, and I suppose the prospective buyers are differently affected by what they read. So my views on the subject must be taken as entirely personal. When I read over the long list of people who have queens to sell, I wish to know at a glance where they are situated; and here I must confess my ignorance. I cannot always make out the abbreviations used by the postal authorities, and the public, to denote the different States. So, sooner than worry it out, I pass on to an "ad" that tells me where the breeder lives, without the help of the atlas. It is very natural that the buyer of bees and queens should want

to know the location of the sender. When other things are equal there is no use in ordering from the farthest point on the North American Continent. If the buyer in Quebec orders queens from California, or the buyer in Washington State from Florida, he knows his queens will be a long time in the mails.

Then, again, with so many good, reliable breeders, why should I have to write for the catalog of one before I can get his prices? Why can't he tell at once? And also say when he will start shipping? It would probably be all the better if he stated the other general particulars that the buyer wants to know, such as color, strain, and if safe delivery is guaranteed. Some breeders include Canada in their safe delivery, and they probably get their reward in trade. A conservative buyer might hesitate to order from a very large advertiser whose prices were about half those of the vast majority. But he might give him a small trial order, which might lead to big business later if everything was O. K.

I bought a very good queen last year for 60c, but heard later that the breeder had cleared out with other people's money. If a breeder is shipping diagonally across the continent I think he would be well advised to use the large cage, or two of the small ones fastened together with a hole cut through. In this latter way a queen came from England to British Columbia in splendid condition after 14 days' traveling.

It would be only fair to the breeder if the buyer would always return the cage with the dead queen and bees, if he expects replacement. For I am sure there are people who victimize breeders in this way, depending on him not to doubt their word. On the other hand, I have returned a dead queen and then had a letter assuring me that the queen was probably only numbed, and if I had only put her in a warm place she would have been all right. The same concern sent me a used hive, when I paid for a new one. But it is only very occasionally that these things occur, on account of the care the bee journals take before accepting doubtful advertisements, and

if a scamp does get a start, he doesn't last long.

A very important thing for both parties to remember is not to neglect to answer correspondence that needs immediate attention. Openness and honesty will do the rest.

June Tour of Western New York Honey Producers' Association to be Held June 10.

10:30 a. m.—Beekeepers will assemble at the apiary of Wm. F. Vollmer, which is located on the Akron-Crittenden Road, near Hawkins' schoolhouse, two and one-half miles north of Crittenden, three miles south of Akron.

12:00 m.—At apiary of J. Roy Lincoln, Pembroke, N. Y., in the village, on main road.

1:00 p. m.—At apiary of John N. Demuth, also of Pembroke, N. Y.

2:00 p. m.—At apiary of F. W. De Temple, Darien Center, in the village, on state road, Broadway.

Other yards will be visited, time permitting. Demonstrations will be given at all the above named yards, and standard time will be observed.

Australia, the Beekeeper's Paradise

By Tarlton Rayment, author of "Money in Bees," Etc.

(Concluded)

Victoria

THE third state to undergo review is "Vic," which is the smallest on the mainland; but we must hasten to explain that Victorians do not admit being third, or even second, to anyone on earth. To "do" Victoria on two sheets of foolscap on the lines of these articles means that injustice will be meted out to something or some one. We can't help that, two pages are the limit.

Any physical geography will show at once that Victoria is a land of forests. The range of mountains that has its beginnings in South Australia stops short for a space near the Victorian border, then the dividing range runs across the center of the state from west to east, thus furnishing watersheds for a lot of rivers that flow north into the Murray River and a lot more that flow south into the Southern Ocean. And the forests are everywhere, on both slopes of the mountains and even down onto the plains to the west. All kinds of botanic life may be found, and the state ought to be proud of the immense variety of eucalypts found within its borders. It is a great honey-producing state, perhaps the greatest in the world, for the large majority of indigenous plants yield both honey and pollen. On the mountains are red box (*E. polyanthemus*), stringybarks (*E. eugenoides*) and other species, white gums (*E. paludosa*) and other species, spotted gums (*E. goniocalyx*), apple box (*E. Stuartiana*), messmate (*E. obliqua*), ironbark (*E. sideroxylon*), peppermint (*E. amygdalina*).

Along the rivers are red gum (*E.*



Not potatoes, but bees in straw skeps done up in rough sacks for shipment from Puy-De-Dome to the devastated regions of Northern France.

rostrata and *E. terreticonis*), swamp gums (*E. Gummi*), manna gums (*E. viminalis*) and on higher land yellow box (*E. melliodora*), and since this is to be a general survey, we must firmly decline to enumerate any more eucalypts. Suffice it to say that to look over the illimitable range with its winding blue gullies clothed with the velvety greenness of dense forest growth is to realize that there is room for millions of apiarists. Every day our view extends over hundreds of miles of densely covered country and not a beekeeper to gather even a fraction of the vast crops of honey secreted year by year. The forest may be secured on lease, 2,000 acres for, say \$25 per year.

To the west, the wheat country, there are belts of rich honey plants. Along the banks of the Murray River are the irrigation settlements that extend quite a distance from the river. Fruit blossoms and lucerne in abundance, for instance 600 acres of citrus fruits in one garden. Have you anything as big as that in America?

Down south, and especially the southeast, Gippsland in particular is the dairying land, rich dark soil, some fine alluvial that grows almost any crops, where the introduced blackberry has run wild and ruined the farmers that neglected to stem its insistent advance. Fourteen feet maize, and clover, white Dutch, strawberry, alsike, crimson, red and some others. Big trees—you take our word for it, they are big. Eighteen hundred fence rails 9 feet long by 10x3 inches out of one "stick"; where the axe men go up ten and fourteen feet on spring-boards to escape the enormous buttresses at the base of the giant, before attempting to fell the tree.

Of course, in a country such as we have attempted to describe there must be plenty of apiarists. Well, not as many as you might imagine. There are very few, if any box-hive men, for the laws of the state preclude the keeping of bees in other than "properly constructed frame hives"; such is the wording of the act.

There is a beekeepers' association, but it is very small and not at all representative of the many progressive apiarists in the state. The writer of these articles favors a federal body. The state association is not blessed with longevity; its income is very small, but the aggregate of all states placed at the disposal of one Federal body might do some good.

Regarding the instruction of novices and others who desire information, little or nothing is being done. The writer would like to see a Federal body of apiarists charged with the dissemination of apicultural knowledge, and to possess the power of granting certificates of competency to candidates who pass the prescribed examinations. In addition, such a body could more efficiently handle the export problem, and, under Government aegis, investigate the why and the wherefor of diseased

bees—and undesirable beekeepers. (This is an afterthought).

Now, here is a secret or two about the returns per hive. We can show a record of 10 60-pound tins per hive, equal to 600 pounds, and, on the contrary, some years the return was not one ounce per hive. We are going to leave your readers to fill any figures they wish that will enable them to determine what is a fair average return. It ought to be easy; look at the range we have indicated, 600 pounds down to zero. So you see the apicultural industry in Australia is very like the same industry in America. Don't you think so?

New South Wales

It was in the "Ma State," otherwise New South Wales, about 1882, that Captain Wallace, of the ship *Isabella*, landed the first colonies of honeybees in Australia. They were black bees, and so favorable for insect life are the conditions existing in the indigenous forests that the insects spread over the entire continent in countless numbers. The honeybee thus introduced is now known as the "bush" bee.

Like the rabbits, sparrows and foxes, the bee was obtained from Europe, but unlike all the former, the bee proved a blessing. The native bee, about the size of the common house fly, belongs to the genus *Trigona*, and while they make honeycomb with hexagonal cells about the diameter of a pin's head, the whole colony is rarely larger than a man's two hands placed palm to palm. They do not always build in rocks or holes in timber, but often just hang under a projecting branch. Bumblebees, Carpenter bees and some others are to be found. Strange to say, Mr. Gerald F. Hill F. E. S., one time Government Entomologist for the territory, informs me that he never encountered wax moths in the nests of the *Trigona*. (We had to insert this here because we forgot it when dealing with northern Australia, and, "better late than never.")

To get back to the "Ma State," it is so named because its people like to affect a motherly tone when dealing with the rest of Australia. Mind, we wouldn't like to say this in an "Aussie" journal. However New South Wales is a fine place and we are not surprised at Captain Cook landing there. Right now we should like to recall the fact that the same Cook acted as one of the scout-leaders that piloted Admiral Saunders' fleet at the landing of the British forces, under Wolfe, when Quebec was captured from the French.

To get back to the "Ma State" for the second time—if the Editor's patience will permit—It's "some" bee country. Near the coast the mountainous range that divides "Vic." runs northerly and almost parallel with the sea shore. It's a great forest, carrying a dense growth of eucalypts. The climate ranges all over the thermometer, both "F." and "C." It's way down cold in the southeast, about Monan, where the apiarists swear by the tremendous flows of

honey from the 'snap or silver-gum' (*E. vitrea*). Along the rivers the beekeepers praise the red-gum (*E. rostrata*). On the plains, the westerly portion of the state, the rich melliferous scent of the yellow-box pervades everything and makes fortunes for all the bee masters—that is, when the speculating profiteer permits. Up on the high land there is bloodwood (*E. corymbosa*), cabbage-gum (*E. coriacea*), ironbarks (*E. sideroxylon*), and other species, mahogany (*E. resinifera*), fuzzy-box (*E. Baueriana*), white box (*E. hemiphloia*), muzzelwood (*E. stellulata*), tallow wood (*E. microcorys*), and hundreds of wattles; but we're full up of enumerating any more, Mr. Editor; but should you care to insert others, look up our book from page 240, then clip ad infinitum.

Your readers must remember that we must keep one eye, that is figuratively speaking, on Editor Pender, of the "Australasian Beekeeper," for New South Wales is his state. However, about his district, it is mostly lucerne, and there are other areas in the state where lucerne is the mainstay. The "Ma State" has a live beekeepers' association with some district branches, with some jolly good apiarists, too. They have an apiarists' "Act" somewhat on the lines of that in Victoria, but space is too valuable to raise any controversy over the similarity of mere acts of Parliament, but that august body lays behind "Vic." for it yet permits selfish and unscrupulous settlers to ringbark and otherwise destroy valuable timber without much supervision. The "Act" says, "must leave 8 trees to the acre." Nuff said. "Vic." leases the tree tops to bee farmers at so much per annum, but "Viv" is miserably weak in dealing with the fire lighters who every year cause the conflagration of huge honey-yielding forests. So it's a "toss-up" between the two states, after all.

Some very large crops of honey have been recorded from New South Wales, but we don't wonder at that, as the New South Wales bees work all the hours God gives them. Yes, we mean it literally. Editor Pender, of West Maitland, once wrote that his bees worked in the moonlight and if any of your readers feel contentious over the matter we refer them to him. We feel sure he'll give it to them first hand, right and left.

By this time your readers will see that while there are many other honey plants, the main crops of the Australian mainland are produced from the "Glorious Gum-trees," as one of your leading architects described them when just viewing them growing in their native surroundings.

Queensland

When one of our cornstalks was enjoying leave from his regiment of Light Horse, he wandered over to London, the city of his forbears. His tall form and sun-tanned hide, along with his apparent simplicity of nature soon earned this bush child many invitations to staid English homes. He "swanked."

"Yes," said he, "my father owns the largest prickly pear estate in Queensland." The silence of awe was his reward. But to Australasians the joke is the fact that the Queensland Government will give away first-class land to any person who is willing to clear it of "pear."

But the story contains a libel on the great northern state. It is a magnificent land with a semi-tropical climate and heaps of bananas and pine-apples, sugar cane and cattle—and honey—and no foulbrood or much bee disease of any kind. Of course, there is prickly pear on the land, and the water-hyacinth on some of the streams, but these are mere trifles compared with the wonders of the forest. Yes, some honey is gathered from prickly pear, but the melliferous wealth of the indigenous trees is beyond belief.

Some of your readers will remember (American Bee Journal, September, 1915, page 313) one of our illustrated articles depicting a spine-bill honey-eater rifling the curiously-shaped flowers of the silky oak (*Grevillea robusta*). The writer has shaken branches of these trees and received a heavy shower of nectar. In the "bush" there are all sorts of climbing plants like the clematis (*Assitata*) and other species. This plant secretes a nice honey of a slightly greenish hue, but Queensland is typical in that the main crop of honey is derived from the indigenous gum-tree.

As a matter of truth, while a few eucalypts may be common to two or more states, the yellow box (*E. melliodora*), for example, each state has species peculiar to it, and each species has its distinct period of florescence, so that not a month passes but some portion of Australia is harvesting a heavy crop. So, to make the fact of local application, each district has its own particular favorite. One district claims red-gum as its "banner" tree—that's America—Another puts its money on yellow box—that's a sporting term. Yet another will say, "My oath, that snap gum is a bonzer"—that's pure Australian. By the way, don't think that the preceding paragraph is applicable

to Queensland only; it applies to the whole of the great commonwealth.

Along with the usual list of wattles or Acacias, the state owns a large number of gums; there is the grey-leaver and the broad-leaved ironbarks (*E. melanophloia*) and (*E. siderophloia*), the coolibah (*E. microtheca*), narrow-leaved ironbark (*E. crebra*), blackbutt *E. uiluralis*, white gum (*E. haemastoma*), white stringybark (*E. acmenioides*), spotted gum (*E. maculata*). But we cannot do justice to half the honey plants of Queensland. The "Apicultural Journal," the official organ of the beekeepers' association, is published at Brisbane under the editorship of E. L. Jones, with E. M. Tarte as secretary of the publishing company. The writer of these articles is the illustrator. It is nicely "bot up" and the printing generally is good. They are all practical men who control the subject matter. Queensland is blessed with many progressive apiarists and the State Association is a live one. At present there are three bee journals published in "Aussie," but the "Australasian Beekeeper," Editor W. S. Pender, is the oldest and enjoys the largest circulation. The Queensland is very enterprising and spends a fair amount on illustrative reproduction. The Victorian Journal is the newest, but more stodgy in its make-up. We like a good cover design, and the Victorian Journal is lamentably deficient in that respect. (By the way, speaking from the artistic aspect, it is time the "Western Honey Bee" selected a new dress. Considering the goods inside, it requires a better showcase.)

Queensland apiarists have an enameled medallion for their members and generally they are well up to date.

Tasmania

The "Apple Garden," or "Tassie," has a more southerly latitude than any other state, and while it grows very huge trees, they are better suited for the saw-milling industry. They throw up giant clean boles for hundreds of feet and, as mill logs, are unsurpassed. The small feathery tufts of foliage that crown these trunks do not carry much bloom. It

is generally true that the stunted trees with large spreading tops are the greatest yielders of nectar. The true blue gum (*E. globulus*), so well known to Californians, is limited to Tasmania and Victoria. Tasmania grows plenty of clover and harvests honey from that source and, of course, there are the apple trees; but you should see its sheep and the wool therefrom. In conclusion, Mr. Editor, we would like to make one request of your readers: "Please do not write for seeds." We are interested in the drawing of the plants and also the honey from gum-trees, but not in the sale of seeds or plants.

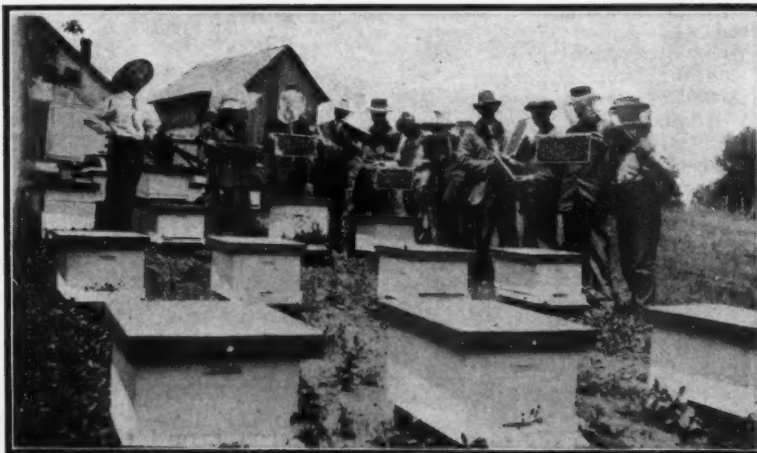
Selling Honey

By A. Gordon Dye

Your interesting article on the honey selling campaign of the New York Globe leads me to add a word. The people of our cities like honey and will buy readily in 5 and 10 pound pails if it is brought to their attention and steps taken to keep them regularly supplied. But to do this work, cultivate a demand for honey, a study must be made of city people's habits of buying. You must win their confidence as to the purity, quality and reliability of your goods.

Honey flavors vary, and people's tastes vary, so honeys should be graded and labeled so that customers may buy the flavors they prefer, and be sure of getting them. City people are accustomed to having their needs supplied at regular intervals and only a small proportion will take the trouble to order by mail or telephone, and for the present they have not formed the habit of buying honey in large containers from the stores. This means that orders must be solicited if we are going to reach a large proportion of the consuming public, and the same territory must be covered regularly. This will require a large supply of honey which you can back as to quality and flavor. Agents and delivery service must be maintained for twelve months of the year. It is evident that individual beekeepers cannot do this work alone advantageously for several reasons: First, most beekeepers are of necessity too far from the large cities to conduct what must be a city business. Second, few beekeepers would have a sufficient supply to maintain such a business with one or more agents and delivery service. Third, few producers are qualified for or have the time to manage both the production end and the sales end of the business. And it is demoralizing to good business to have a number of beekeepers spasmodically putting a limited amount of honey on the market, of indefinite quality, in varied containers and at widely divergent prices.

Agents and delivery service started with sufficient honey back of an enterprise of this kind, with the right kind of a man to manage the business, beekeepers could be assured of a good market for their honey and the consumer could have the best honey on his table at a cost of from 10 to 15 cents a pound above whole-



Field meet of Scott County, Missouri, beekeepers near Benton

sale prices, while in the bottled form, through the ordinary trade channels, the price must be from 30 to 40 or more cents a pound above wholesale prices.

I know these to be facts, as I have this winter marketed my own crop and what I could buy, totaling about 17,000 pounds in this manner, and have reached but a few of the possible honey consumers, and at irregular intervals.

Here is the field for co-operative effort.

New York.

Turnbull's Method of Shook Swarming

By F. Dundas Todd

After the first of May most colonies in British Columbia are occupying two stories, mainly in 10-frame bodies. The year 1919, from the beginning of May to the end of August, was very dry, and in most regions was rather hard on the bees, but in Mr. Turnbull's locality there was a steady building-up flow all season, which may have much to do with the success of his experiment.

Discovering queen-cells one day, he decided to make a shook swarm, but having lots of spare combs, he wondered if it was possible to get a young queen mated from the lower half of a hive while the old queen occupied the upper half. He had previously tried the opposite, that is, mating the young queen from the upper story, with rather poor success.

His first step was to take three frames of brood from the hive and make a nucleus alongside, a queen-cell being left on one of the frames. This was intended for reserve if the young queen on the old stand failed to mate and start laying. Then on the old stand in the lower story he put all the remaining frames of brood excepting one, filling up the space with empty combs when necessary. A queen-cell was also left on one of the combs. Above this story he placed an excluder, then a second brood-chamber in which was the last frame of brood with the old queen, the seven combs or so left over, and empty combs or frames of foundation to fill.

Each hive was left in this condition until the start of the honey flow in the beginning of July. The young queens all mated and started egg-laying. When the flow started such old queens as he wished to save he carried to a new stand with two frames of brood and had them in good shape for wintering by the end of the honey flow, which in 1919 was, with him, unusually long. Where he did not wish to save the old queen he killed her and placed the excluder above the second story instead of the first.

One colony handled in this fashion gave a crop of 500 pounds, another almost as much, while the average from eight colonies in his home yard was 300 pounds.

At the Seattle meeting of the Washington Beekeepers' Association

Mr. Turnbull told of his experience, to the intense interest of one of the big honey producers who had experimented along the same lines, but with complete failure as the result. On comparing notes the one point of divergence seemed to be the condition of the hive when the experiment was begun. Mr. Turnbull's colonies invariably had developed the swarming fever, the others had not, so never started queen-cells in the lower story, or destroyed them when given.

Mr. Turnbull's great wealth of combs was the consequence of a fierce siege of European foulbrood he had undergone the previous year, which had reduced his apiary by 75 per cent. In the lower Fraser country European foulbrood is no respecter of colonies, and attacks the strong and the weak with equal impartiality. Today one may have colonies covering twenty combs with from ten to fourteen frames of brood. A month later the brood will be rotten all through the hives. There are other experiences equally as peculiar. A good, careful beekeeper, with six colonies, found them all affected, so he dequeened at once and ordered queens from a queen breeder to arrive in three weeks. Two queens were sent at once and he introduced them, that being the tenth day after dequeening. All disease was apparently cleaned up, as it did not reappear. The rest of the queens arrived sixty days after dequeening, were introduced, but three of the colonies developed the disease. This experience seems to me to emphasize the value of resistant stock.

British Columbia.

(This is just the reverse of the plan described by Frank C. Pellett in the October, 1917, A. B. J. His plan was to mate the young queens in the upper story. While some correspondents have reported good success by that plan, others have reported failure. We will be glad to have further reports on the plan of mating the young queen in the lower hive-body as practiced by Mr. Turnbull, who reported success in every trial.

The difference should be noted between the two methods. Turnbull did not make the trial until the bees had built queen-cells, while Pellett succeeded with colonies in normal condition and where no evidence of the swarming fever had appeared.—Editor).

The Honey Producer's Best Friend

By Clifford F. Muth

After reading Fred Huchting's article on "The (poor) Middleman," in the April issue of the American Bee Journal, I feel like Mr. Hawkins at the Buffalo convention—"Mad All Over."

Mr. Huchting refers to the prices of pork before and after the packers took hold of it. Let us suppose that all the pork packers went out of business and the farmer had to rely upon killing and selling his hogs to the consumer, a pound or two at a time. To say the very least, the far-

mer would get lots of experience and overhead expense to boot.

It is true that he may receive a few cents per pound more by doing all the work himself, but when all the farmers sold the same way, there would be a lot of throat cutting, besides the hogs.

The principle is the same with the beekeepers and the honey packers. One works for production and the other for consumption. Either one could do both to a certain extent, and after that he would neglect one or the other.

You, Mr. Huchting, are very, very much mistaken about the honey packers. They are the ones who advertise and create the demand for honey and hold up the price by out-bidding each other.

The next time you meet a honey packer, shake his hand, for he is your friend in need, and a friend indeed.

Ohio.

Imperfect Mating

The article in the April Journal by Prof. John Anderson on "Imperfect Mating of Queens" seems to explain an unusual experience occurring at my home yard this spring.

In March, 1919, I removed all my bees from the home yard to a gum swamp one mile away, excepting a good colony with breeding queen. My idea was to have the queens purely mated. In June this colony prepared to swarm, so they were swarmed artificially, leaving the old queen, now 3 years old, at the original stand. The swarm or colony No. 2 quickly built up with a young queen and made two supers of honey. Colony No. 1 made only one super of honey, in September.

An examination on March 3, 1920, showed that colony No. 1 had no brood, while No. 2 had eggs scattered over several frames, and drone larvae in worker cells. Thinking both colonies to be queenless, they were given frames of brood, but neither began cells. An attempt was made to introduce a queen into colony No. 1, with failure.

After a close examination on March 12 a young queen just beginning to lay, was found in No. 1. An old queen was found in No. 2.

The eggs in colony No. 2 hatched into drones only. The eggs laid by the queen in colony No. 1 hatched into drones and workers, but both of meagre quantity for the time of the year. These queens were promptly removed, and both colonies began queen cells.

It seems that the queen in colony No. 1 superseded the old queen late in the fall of 1919, but began laying late in the spring. No drones were flying when she began to lay, March 12.

My home yard is in a drained swamp area with all the surrounding forest removed, making the conditions similar to those on an island.

My bees wintered nicely with no loss. They are mostly building up strong, and in two stories. A few colonies have a disease unknown to

me. The yellow jassamine is in full bloom, causing many young Italians to die. I find some of the darker colored colonies seem to be immune to this poisonous honey.

Am working for a flow from gum and gallberry this spring. They failed last year.

B. ANDERSON.

North Carolina.

Death of L. C. Woodman

The death of Lewis Cass Woodman, aged 72, occurred on May 3. He was the father of A. G. Woodman and had been engaged in beekeeping for over 45 years, keeping as high as 400 colonies of bees in connection with fruit farming on an extensive scale. His first experience in bees was a purchase of 10 colonies for \$150, in the fall of the year, and the next spring they were all dead. He immediately purchased more bees, and has been in the business continuously since that time. At different times he has shipped carloads of bees to different parts of Upper Michigan and his last venture of this kind was only 2 years ago in the shipping of 200 colonies to the Upper Peninsula, into the famous clover land districts, which also abound in wild red raspberry, epilobium or fireweed and other honey-producing plants.

Swarms on Foundation

Some time ago I saw stated in the American Bee Journal that full sheets of foundation should never be given to a swarm, and in the May number, page 170, column 3, you say: "It will not do in hot weather to give all foundation to a swarm." Well, I have hundreds of combs drawn out under this very condition. It is true if a swarm is forced to cluster on the foundation the latter will generally break down, but if an empty hive-body is placed first on the bottom-board and the body containing the frames with foundation over this, the swarm will cluster in the lower empty story; the foundation will be drawn out in a very short time, and the resulting combs will be as perfect as one could wish.

Two days after hiving the swarm I remove the lower empty story, and if some of the outside combs are not all drawn out I put them in the center. A super should also be given then and if it contains drawn extracting combs a queen excluder should be used.

The use of an empty story will also help prevent the absconding of swarms.

Indiana.

Artificial Increase in Colonies of Bees With Prospects for a Honey Crop

By Brother Alphonse Veith, O. S. B.

Increase in the number of colonies, either by dividing or natural swarming, will generally result in a shorter honey crop. It can, however, be done with less interference in the production of honey if handled in the proper way. First, colonies must be quite

strong, covering about 16 Langstroth frames, with 6 or 8 combs mostly filled with brood. Next is a good honey flow. If a number of colonies are to be divided and the apiarist intends to let his own bees rear the queens, then the best and most prolific colony should be divided about 10 days previous to the others, and the sealed queen cells are used with a cell protector to start new colonies.

To obtain the best results, choose the time of the day when bees are most busy in gathering honey. Place your empty hive right near to the colony to be treated; take half of the combs with brood and bees and place them in the new hive. If drawn-out combs are not at hand, use full sheets of foundation. Intermingle them as much as possible with the combs already occupied by the bees, and the foundation will be drawn out quicker and straighter than would be the case if placed side by side. Leave both colonies on the same stand as near together as possible; let each occupy half the space which the colony occupied before dividing. This is very important, because the returning field bees, not knowing which is which, will enter into both, and so the working force will be divided more equally than would be the case if one is moved to a new stand. In case they are moved to a new stand, a great number of bees will return to the old stand, leaving the new colony weak and almost inactive for many days. However, if left on the stand, as de-

scribed, they will work more busily than they would if left single. If drawn-out combs can be given instead of foundation, the bees treated thus will store per colony, spring count, nearly as much surplus honey as they would have stored if no increase had been made. This is especially the case when there is a late honey flow.

With drawn-out combs, bees treated thus averaged 65 pounds of extracted honey per colony, spring count, in a locality less favorable for a great honey harvest, and each colony was well supplied with winter stores after the last honey flow, in October.

(We would recommend that the colony which is to rear the queen-cells be left undivided on the old stand, so that it may not be weakened, as it is very important that the queen-cells be produced in a very strong colony. Its queen may be removed and used for another purpose, or she may be placed in a new hive with brood from another colony and also given young bees from some other colony. The rearing of good queen-cells is of the utmost importance.—Editor.)

Mary had a swarm of bees,
Who, just to save their lives,
Went everywhere that Mary went,
Because she had the hives.
Now Mary had a nice bee dress,
Which made the men all wonder.
But everywhere that Mary went
The bees would get in under.

—Anonymous.

BEEKEEPERS BY THE WAY

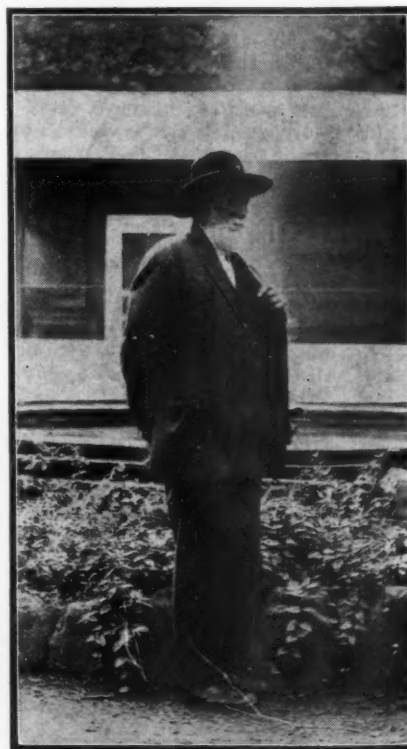
An Old-Timer

J. E. Pleasants, of Orange, Calif., is one of the few men still living who went to California during the first gold excitement in 1849. As a small boy he crossed the plains with his father at that time and has lived to see California change from a howling wilderness to a veritable garden spot. In 1873 he began beekeeping, and has continued as a honey producer since that time.

Mr. Pleasants has long been prominent among California beekeepers and had charge of the exhibit of the California Association at the New Orleans exposition. For the past 18 years he has been in charge of bee inspection for Orange County.

When he began beekeeping nearly all the honey came from sages and other native vegetation. As the country developed, the flora gradually changed until the principal sources came to be such cultivated crops as oranges and alfalfa, although much honey is still secured from wild plants on the mountain sides. He has produced as high as thirty tons of extracted honey in a season in his apiaries.

Although regarded as an old-timer, he is by no means a back number, for California beekeepers still regard Pleasants as a leader, and have elected him President of the State Beekeepers' Association.



One of California's original old-timers

A New Bulletin for Beginners

A very good bulletin, entitled "Beekeeping for Beginners," by H. B. Parks, has recently been issued by the Experiment Station of Texas at College Station. The bulletin is quite complete, with 25 pages of matter of timely interest to the novice. It is well illustrated and should be easily understood. Beekeepers interested can probably secure copies by addressing the Director of the Experiment Station at College Station, Tex.

Mould and Bees

By S. H. Sabine

In connection with the discussion now going on in the bee magazines on the subject of "mould" and the "disappearing disease," I had an experience which may be of interest. I was at that time located in Buffalo, N. Y., and purchased the colony from a farmer who had had the hive covered with hay during the winter. When I moved the bees home, April 15, the colony was not strong and the bottom board was covered with dead bees.

About a week later I transferred the nine frames which the hive contained to a new hive and discovered that the three outside frames on each side had some mould on them and all the dead bees on the bottom board were covered with mould. The remaining three frames contained some brood and eggs. Then followed two weeks or more of rainy weather, during which time the bees could not do much in the way of pollen gathering. Then came a few bright, warm days when they worked hard.

After the bees started working I noticed considerable fighting at the entrance. They would tumble and roll around, holding on and biting each other, and would finally roll down the alighting board locked together. Then one of them would fly away and the other of the pair would crawl around in the grass. This continued for several days, with several hundred bees crawling in the grass daily.

One day I opened the hive again to see if I could determine the cause and found nearly as many dead and mouldy bees on the bottom board as there had been when I transferred

them to the new hive, but they were nearly all under the outside frames, which I had previously noted contained mould. I cleaned out the hive, removed four frames which contained the most mould, and replaced with frames of foundation, raised the back of the cover about an inch for ventilation for the rest of the day and closed it before night and had no more trouble with the fighting, or, as I at first thought, robbing bees.

This colony afterward built up strong and stored about 25 pounds of fall surplus. The queen was less than two years old.

Texas.

Do Queens Lay in Queen Cells?

Does the queen ever lay an egg in the queen cell? I have my doubts about it, for I don't see why she should want to raise a queen that would drive her from her home. I have seen a queen on the alighting board, when the swarm went out, turn and go back in the hive. The swarm had to return. Next day the bees got back of her and pushed her off and she went with them. Now, is it reasonable to think she laid that egg in the cell? We know that queens reason. When the honey flow is letting up she will quit laying so as to not have too many bees, as the old ones are not wearing out so fast. We know that the bees make the queen cell and guard it.

Do bees reason? I think they do. Proof of it: If we put in a hive a comb that is breaking loose from the top-bar, the first thing they do is to build braces across to the other combs to keep it from breaking down when filled.

MICHIGAN.

(We were inclined to believe that queens never lay eggs in queen cells, until a number of people testified to seeing them do it. It is possible that they do this only when the cell is rudimentary, incomplete enough that it may not look to them as other than a short drone cell. We know that a queen eagerly destroys full-sized, inhabited queen cells, if the bees permit her to do so. Anyone who uses a single-comb observation hive has occasion to see this, if he introduces a queen cell to it while there is a laying queen there, or if he can induce the bees of it to rear queen cells prepar-

atory to swarming and then change their mind.

Do bees reason? We believe they do. But others are entitled to whatever opinion they may entertain after hearing the pros and cons. What is convincing to one man is insufficient to another.

As to the queen's "letting up" of her laying at the end of the season, there are causes for it, other than her powers of reasoning. She lays more or less, according to the amount of food offered to her by the bees, as they meet her, in the hive. We are told that they feed her on the same "royal jelly" as is fed to young larvæ. But they certainly offer her honey, also. Moreover, there must be a season of greater laying for queens, as for hens. If there is an intentional reduction in her laying at the end of the season, it is due more to the bees than to her own volition.—C. P. D.)

Angry Bees

I have kept bees for about 18 years, have been a voracious reader of bee lore, have had as many as 90 colonies and have always tried to keep abreast of the times in the management of my apiaries. I have, for a number of years, bought queens from breeders who have boasted of gentle strains, not that I minded stings, but for the comfort of my family and friends, though I cannot say that I ever requeened a colony for the sole reason that they were cross. I could forgive a few stings if they delivered the goods. My trouble began last summer, when I clipped the queens during fruit bloom and dandelion. Only 2 or 3 colonies were marked as cross, and the remarkable thing about the incident was that it occurred nearly simultaneously in apiaries fifteen miles apart, the outapiary being by far the worst. These bees were in a pasture and situated about 30 feet from a poplar bluff. A few cattle and horses were at all times in the pasture, but gave the bees a wide berth in the daytime, at least, and the length of the grass showed that little grazing was done in the immediate vicinity of the hives. About the first of July these bees were decidedly unpleasant to handle, but as I had often remarked that our little friends were always more peppery when they were working on mustard, and as there was lots of that about, and clover apparently yielding nothing, I hoped they would soon recover their temper. But each visit found them worse than the last. They appeared to be on the lookout for me, and came to meet me, an attention I was not capable of appreciating. Smoke was of no use; it only seemed to increase their anger; and on one occasion, on opening the smoker to replenish, they piled into it to a depth of an inch or more, extinguishing the fire. Gloves gave but partial protection to the hands, and the smallest aperture in my clothing was investigated with a vigor and pertinacity worthy of a better cause, and with a success that caused me occasionally to make a spasmodic grab at my clothing and



Henry Ehlers, of Anamosa, Iowa, has kept bees 45 years

stroll delicately over to the friendly shelter of a barn, to remove the stings and vainly try to make myself invulnerable. It was not necessary to open a hive to investigate this demoniac frenzy. At the home yards this condition did not start quite so early nor did they get quite so bad, but considerably worse than anything I had experienced before.

Now for the possible cause. I have, for seven years allowed a few sheep in the home apiary to keep down the grass. These, at first, were Suffolks, having smooth black faces, a ready mark for the bees. Last year I changed to Oxfords. These have very woolly faces, few vulnerable spots, and they are not nearly so much afraid of bees as the Suffolks. Having a few young rams, I shut them in the apiary, and my theory is that they disturbed the bees at nights. At the outapiary the cause was similar, though conditions differed. It was after the honey was off and work for the season was over that I discovered what seemed a plausible reason for the anger of the bees. The bluff, a few feet from the hives, had been, during the fly season, the stamping ground at night for a bunch of horses. The soil was a very heavy, rubber-like clay. I think they would feel the vibration, with the resultant irritability. Do you think this possible, or has anything similar ever been reported? CANADA.

(We believe your surmise is right. It takes very little to render some bees cross. When they once become cross, it seems to remain in the family. The only way we have ever found to change the disposition was to change the queen. But the initial cause of the ill-disposition must be also altered.—C. P. D.)

Queen Bee Introduction by Means of All-Young Bees

By F. Greiner

Our friend, Jay Smith, tells in *Gleaning* of some humiliating facts as regards queen introduction. I have noticed we go along sometimes a term of years and have remarkable success in introducing, and all of a sudden, when we think we have the thing pat, we meet our Waterloo. To confine a new to-be-introduced queen under a push-into-the-comb cage is a very old one, and as good a one as I know of. Many years ago I received queens in the mails in such cages. They consisted of a shallow wooden frame, covered on one side with wire screen and closed up on the other side with a tin slide. Several prongs were fastened to the frame. They were to be pushed into the comb over some honey and hatching brood, if possible, and presto, the bees and queen were liberated on the comb. Our friend Smith's cage is better, in as much as prongs are all around the cage, thus preventing an untimely escape of the bees within the cage. I think here was the weak point of the old style cage. The principle of the cage is that the strange bees come in direct touch with the comb struc-

ture and a portion of the young bees, which hatch under the cage. With just emerging bees one may do almost anything; they mingle peacefully with any other bees, accept any kind of a queen, stay anywhere, etc., and the past season it occurred to me they might be made the reception committee to have strange bees introduced into their community and so I tried it in a few cases late in the season. It gave me excellent results and I write this in the hope to induce other beekeepers to try this method this summer. It is not necessary that we see the young bees emerge; there are usually plenty of young fuzzy bees on any brood comb which an experienced beekeeper may select from among the other inmates, pick them up by the wings and tuck them into the cage where the strange queen is. The more of these young bees we can stuff into the cage without overcrowding the better. The next day an opening may be made, or the tin slide over the candy hole may be removed and the uniting of the folk within with those without will proceed harmoniously. We can well afford to take more time to make sure of introducing a queen bee; it is not simply the loss of a queen which is at stake, but also the greater usefulness of a colony of bees, which may mean more than the mere value of a queen.

New York.

A Good Location

Bees here have generally wintered very poorly, many small beekeepers losing all their bees, and many ordinarily quite successful beekeepers losing 10 to 20 per cent of their colonies; many weak colonies, long, cold winter and late, backward spring. Last year bees did fairly well. European foulbrood has had its effect on bees not well cared for, many farmer beekeepers losing all they had from foulbrood and neglect. We have very good lo-

cation, generally, for beekeeping here in Warren County, Pennsylvania. Principal sources of honey are hard and soft maples, dandelion, fruit bloom, red raspberry, white-wood, white and alsike clover, basswood, sumac, buckwheat, fall asters and goldenrod, making quite a good list of honey-yielding plants and trees. Our seasons are short and cool, too much so for comb-honey production, but extracted ordinarily does quite well.

Our winters are long and cold, with deep snows, and many years so steady cold that bees do not get a flight for fully four months.

We have a nice home demand at retail for all the honey produced, at good prices. Farmers generally are inclined to increase the acreage of alsike clover and buckwheat, which adds quite materially to the honey crops, and the late buckwheat crop stimulates brood rearing late and fills the hives nicely with both brood and honey, which puts the bees in fine condition, usually, for the long, cold winters.

While we do not get the large honey crops obtained in many parts of the country, yet we are reasonably certain of a surplus every year when bees are properly cared for.

Pennsylvania.

A Short Story

"I see, in the *British Bee Journal* for March 25, a quotation from 'The Shooting Times' which asserts that bees use their sting as a trowel to finish the honey cell and drop a little bit of the poison into the honey before sealing up the cell, saying that 'without it the honey would spoil.' Is there any truth in that statement?"—Ontario.

Answer—The party who wrote that is not the only man to hold that bees put a drop of poison in each cell of honey before sealing it. Even as respectable an authority as Gaston Bonnier, author of "*Les Nectaires*," and of



Quiet Italians on the comb

some excellent works on botany, asserts, in *L'Apiculteur* of February, page 50, that before sealing the cell, the bees "put into it with their sting a drop of venom; for this liquid, coming from their poison bag, has for its principal purpose the preservation of the honey." Years ago, the Rev. W. F. Clarke, for a short time editor of the *American Bee Journal*, held the same view.

As to the truth in these statements, we can only give an opinion, which is decidedly negative of these beliefs. It is quite probable that those statements are based upon the fact that nectar undergoes a change in the stomach of the bee; a certain amount of an acid, probably produced by the saliva of the bee, being found in the honey, while it does not exist in the nectar of flowers. Every now and then, some new-fangled theory, more or less absurd, springs up. Very few of these theories stand the light of discussion and experience.—C. P. D.

How Much a Colony of Bees Consumes in a Year

From *L'Apicultore* of March, 1920

The causes of consumption by a swarm are the following: First, keeping up the life and activity of the bees, in the hive and out of it. Second, feeding of the brood. Third, secretion of beeswax. Fourth, feeding the drones. The daily consumption of a bee varies between gram. 0.003 and gram. 0.12, with an average of gram. 0.03, according to the circumstances in which it finds itself.

The entire amount of food consumed by a larva of worker during the entire period of its development is around gram. 0.40; the daily consumption of a drone varies between gram. 0.04 and 0.05. Thus we may be able to determine the total consumption of a swarm of bees, for its ordinary needs, during the course of, a year taking as a basis a strong colony in a large frame hive, in a country where plants offer a great, single flowering,

for a month, and we will summarize as follows the diverse phases of their activity and consumption.

To figure up the consumption of the drones, we will admit that in a good swarm there are about 1,500 of them, the length of their life being, on the average of about two months, divided into two or more periods, separated by intervals during which there are no drones. Accepting the consumption figure of 30 grams per 1,000 drones, we find that the 1,500 consume, in the two months, kilos 2.7. In thus figuring, we reach, in round figures, 560 kilos, for the maintaining of the swarm in the different phases of its activity. This quantity does not represent ripe honey, such as we harvest from the hives, but nectar, containing between 75 and 80 per cent of water, or representing about 182 kilos of honey.

To this food, necessary to the sustenance of the swarm, we must add what is needed for the brood. A larva needs for its growth and transformations, a minimum of gram. 0.40 of food, and a colony renews its population at least four times during the year. This renewal does not, probably, reach a maximum of 80,000. Let us admit that it is on an average of 60,000. This represents 240,000 larvæ reared at a cost of kilos. 96, of a food composed, for a third each, of water, pollen and honey, or 32 kilos. of honey.

There remains yet to be figured the secretion of beeswax. With the system of movable frames, we return to the bees their entire combs after having extracted the honey, or we may give the bees sheets of comb foundation; but according to De Layens, this is not the best system, and it is thought preferable to let the bees build about 5 combs of 12 square decimeters each, containing in all 660 grams. This wax is produced economically and the apiarist will not see it diminish his harvest; however, it requires a certain amount of food which we may figure at 4 kilos.

Adding the amounts, we find.

To sustain the bees	182 kilos	400 lbs.
To feed the brood	32 kilos	70 lbs.
To produce wax	4 kilos	9 lbs.

Total ----- 218 kilos 479 lbs.

Translated by C. P. Dadant.

(We had supposed that the bees require more honey to rear brood than to sustain the colony. It is a well-known fact that the bees will consume more stores in a few weeks of brood rearing in early spring than are used to carry the colony through the entire winter. Let some of our research men at the colleges look into this matter.—F. C. P.)

Maine Beemen Meet

The beekeepers of Maine held their Convention at the college of Agriculture at Orono in connection with the general farmers' week, on March 24. H. W. Matthews, F. L. Mason and O. B. Griffith were the principal speakers.

Binding the Journal

Mr. Herschell Felton, of Millersburg, Ill., suggests a way to bind the *American Bee Journal* together, which he finds in the "Pathfinder." We condense the more important part of it as follows:

Cut two strips of either tin or cardboard about a half inch wide and of the height of the Journal pages. Punch a hole at top and bottom in each of these, as well as in the edge of the Journal, a quarter inch or so from the back. The holes must be as nearly opposite as possible. Then pass a shoe string through these and tie it. A shoe string is best, as it is more easy to pass it through the holes. The Pathfinder method is a trifle more complicated, but this is sufficient.

A Good Report

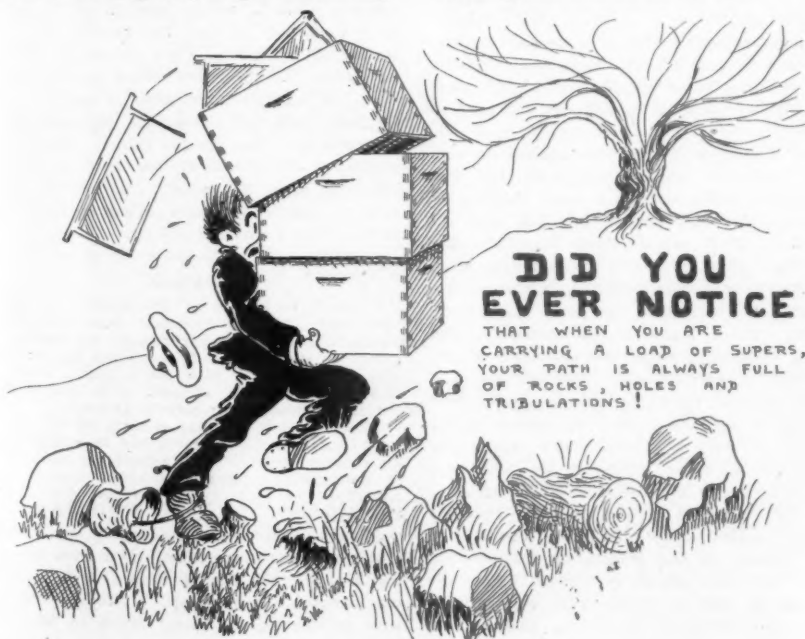
Edgar G. Brown, of Sergeant Bluff, Iowa, reports that from 856 colonies which went into winter quarters last fall in his six yards he took out a total of 847 colonies alive this spring. Several queens were failing, and he anticipated uniting a number of weak colonies. However, he estimated that after all necessary uniting was done he would still have more than 800 colonies ready for the harvest. This is a very good showing and argues well for cellar wintering in northern Iowa.

Heavy Losses in the West

L. P. Peterson, of Vale, Ore., writes us that the winter loss in portions of western Idaho and eastern Oregon will amount to 30 to 40 per cent. He states that about 10 per cent of the bees died during winter, but that the cold and backward spring was fatal to the weak colonies to such an extent as to bring the losses to the higher figure. On April 22 the weather was still too cold for brood-rearing to progress favorably, and the outlook for the season he regarded as gloomy.

Night Conventions

The series of night meetings of the Maryland State Beekeepers' Asso-



ciation came to a close with the final session in the Hotel Rennert on the night of April 29. This series of night meetings has been exceptionally well attended and proved to be of wonderful success. The crowning feature was the splendid address by Mr. G. S. Demuth, of the Bureau of Entomology, Office of Bee Investigations, on swarm control with its application to comb-honey production. His appearance on the program came as a result of a request for his services as a lecturer, and was more than anticipated by the Maryland beekeepers.

Beekkeepers Are Organizing

The bulletin for April from the office of the State Apiarist announces that there are now eighteen county associations of beekeepers in Iowa. These are working in affiliation with the State Beekeepers' Association, of which F. B. Paddock is secretary. Some States have even more county organizations than has Iowa. Much benefit is to be derived from this movement, and we hope that the benefits or organization can soon be extended to the beekeepers of every State where honey production is important.

sweet spraying compounds, but never to a very great extent. We have never yet heard of human beings having been poisoned in this way.

Shipping Bees

I have bought 20 colonies of bees and they are at "Haubstadt," Indiana. Now could I ship these hives by parcel post, providing the hives did not weigh over 70 pounds each, or would you think it would be cheaper to ship them by express to Chicago? What would they charge per 100 pounds for bees when the distance would be about 300 miles from Chicago, Ill? Would you screen them at the top?

CHICAGO.

Answer.—It would be out of the question, we believe, to ship hives of bees by parcel post, even if the weight was not prohibitive. The time may come when this can be done.

The cost by express on a 300-mile run is about \$2.25 per hundred weight. On a straight line to Chicago, like the C. & E. I., there ought to be little delay. If arrangements could be made to get them on a through freight, the bees might be shipped in that way and not be more than two or three days on the way. You could find this out from the freight agent at Chicago, 112 West Adams St. But as the railroads charge very high freight rates on bees, it may be cheapest to send by express.

If the colonies are strong and you ship in warm weather, the bees should have a screen at least 4 inches wide across the top, and perhaps one of similar size across the bottom. The requirements depend upon the strength of the colonies. Very strong colonies, in hot weather, need a space of an inch or two above the frames in which to congregate and, in such cases, a whole screen on top is advisable. Do not ship colonies containing fresh honey, at any time.

Honey From Diseased Colonies

Does honey that has been extracted from foulbrood colonies contain foulbrood germs or bacteria?

CALIFORNIA.

Answer.—Yes, there is great danger that honey from foulbrood colonies may contain germs of the bacilli that cause foulbrood. According to Dr. White, the germ of *Bacillus plauton*, the cause of European foulbrood, is not likely to be carried in honey over winter, as it usually dies in honey, in from 3 to 7 months. But the *Bacillus larvæ*, the cause of American foulbrood, lives much longer. In practice, when a colony cures itself of European foulbrood through the removal and replacing of the queen, there appears to be little danger of its honey being contaminated, while in American foulbrood it seems as if the least amount of honey of a diseased colony transmits it. But in all these matters the proportion of disease in the hive has much influence upon the result. We would hesitate to give to a healthy colony any of the honey from a diseased colony.

Location

I expect to be out of the army in a short time and I intend to make beekeeping (in which I have limited experience) my work. I intend to start with a few colonies and gradually expand until I have the largest number I find it practical to manage. The first problem is to determine where to locate.

Please inform me what sections of the country you consider beekeeping can be engaged in on a large scale to best advantage, and why. In particular, I should like your opinion on conditions in Washington, Oregon, California and Arizona.

ILLINOIS.

Answer.—There are good spots and poor spots in almost every State. If I were traveling through the United States, and visited this particular spot, where I live at present, with its shortage of clover bloom in perspective,

DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

If an addressed stamped envelope is enclosed with the questions asked, a copy of the reply to be published will be mailed to the enquirer. Some questions require too lengthy answers to be available in this department. In such case the enquirer will be referred to the proper authorities or treatises. In many cases if the enquirer will read the questions of the previous numbers he will find exactly what he seeks.

Sowing Buckwheat

I am writing you for some information in regard to sowing buckwheat.

1. How much seed is required to sow an acre?
2. What kind of land is best for its production, rich land, medium or poor? Is bottom land good for it?
3. Which month do you consider the best to sow seed?
4. Should it be sown broadcast, drilled or some other way?
5. After corn is plowed the last time, say the latter part of June, would it be all right to sow it among the corn broadcast, or drilled in between the rows?
6. I want to get a honey crop from the buckwheat blossoms, and also gather the grain; can this be done?
7. About how much buckwheat will an acre of ground produce?
8. Will stock thrive on the grain, and does it make good chicken feed, and does it have to be ground, or fed whole?

ILLINOIS.

Answers.—1. From 2 pecks to a bushel and a quarter, according to the richness of the soil. In poor soil it takes more, as it does not branch out so luxuriantly. Sowing it in a cornfield probably two pecks would be enough.

2. Any soil will do. It is one of the main crops in the poor lands of Normandy and Brittany, in France. It is grown plentifully in the New York State hills, also in Michigan, Ontario, etc. It will surely thrive in "bottom land."

3. We would sow it about July 1. But it may be sown as late as August 1, though early frosts in September would kill it.

4. It may be drilled or sowed broadcast.

5. Either way is good. Do not sow it too early, as it might suffer from drought. It will not yield as much honey in a cornfield as separately, but will yield some.

6. Yes, but buckwheat is a very uncertain crop with us. "American Honey Plants" reports it as very successful in Ontario and in New York State. Our experience is that bees work on it only in the forenoon, rarely in the afternoon.

7. From nothing up to 40 bushels or more, according to circumstances.

8. It is good chicken feed, but is usually in good demand for buckwheat flour. The chick-

ens eat it whole. We don't think it is fed to cattle.

We used to donate buckwheat to our neighbors for sowing it on their farms. As it blooms at the same time as the persicarias (heartsease, smartweed), we decided it did not pay, especially as buckwheat honey is of very poor quality, a fourth grade honey, and damages the quality of the other honey harvested at the same time.

Bees Getting Household Poisons

Will you kindly advise me as to the possible danger from bees getting access to certain types of household poison now being commonly used throughout the country. I refer to poison, the preparation of which includes honey and sugar, and which is placed about the homes to kill ants and other insects, and later is tossed out the windows where it can be found by the bees. Is there any danger to human life from the bees storing such poisonous sweets?

GEORGIA.

Answer.—There would perhaps be some danger to human beings, if the poison you mention could be stored by bees in large quantity, and especially if this poison was slow in its action.

The arguments that militate against the possible injury to human beings, in the consumption by the bees of a small quantity of poisonous sweets, lie in the fact that bees will not take other sweets than honey in the blossom, unless there are none in the fields. In other words, when there is nectar in the flowers, the bees care but little for other sweets. When there is no nectar in the fields, a small quantity of poisonous sweet, gathered by them, would probably be stored in the cells of the brood chamber to be used in feeding the brood. So the poisons would damage the bees and their brood, when they might not endanger human beings who consumed the honey from that hive afterwards.

If the poisonous compounds were gathered in large quantity, this would be a very different question, as the storage of this harvest might be in the supers or surplus honey receptacles as well as in the brood combs.

We have heard of bees being poisoned by

tive, I would probably call it one of the most undesirable spots of all.

There are some very good spots for bees in central Utah, many in Idaho, some in Washington and Oregon; California has millions of acres good for bees. We might say the same of all our States. Perhaps the best, after California, are the Mountain States. Texas has some very productive regions. Michigan and Wisconsin have thousands of good spots.

My advice would be to select the State you prefer. Then visit around a little till you find a spot where beekeepers are successful. Pick out a location where you will not be in another man's way and go ahead. This may be too vague; but the precise directions would require special investigations.

Separating a Double Hive

1. I intend to put a hive body with brood frames containing some honey under my strongest colonies in April, and about the 15th of May, when there is brood in both hive bodies can I separate each double hive by placing the queenless half on a new stand and introduce a laying queen to each and leave the old queens in their old locations? I have a 500-page bee-book which gives only two plans in this regard, and both being very complicated.

2. Would it be better to leave these colonies double until the main honey flow is over and then divide them as above? My idea is that when producing comb honey the latter would not work well unless the brood from the lower hive is exchanged with that of the upper as fast as it hatches in upper hive, to avoid the bees storing the surplus in the upper hive instead of the super.

MINNESOTA.

Answers.—1. Your plan will work if you don't put it into effect too early. The half which does not get the queen must get more young bees, to help it take care of the brood. I would shake a few of the young bees of the queenright half in front of that hive after moving it. Also make sure that they have young larvae in case you do not give them a queen, or in case that queen is not accepted.

2. If you leave the two hive bodies until the main honey flow is over, you will be likely to find that they will crowd the honey in the combs that have no brood in them. In this way you will have a less amount of surplus honey. But if you want much increase, that honey may come into good use to help the needy colonies at the end of the crop. You might treat a part of the colonies early and the others late. In this way, if you watch them closely, you will be able to help the needy ones as often as they need help.

Moldy Frames

I have at hand a good many moldy frames of honey. Can I give same to colonies without them having any bad effects? These frames of honey are but slightly moldy; here and there I find patches of mold on comb.

I also have a lot of empty combs which are affected with mold. Can I use these in the extracting supers, or broodnest?

NEW YORK.

Answer.—You can give those combs to the bees without fear of any bad effects. But I would recommend that you give them to strong colonies, one or two at a time. The bees will soon clean them. Weak colonies would have more trouble.

The combs for the extracting supers might be exposed to air for a few days, before using them.

Hives With a Glass

I am a new beginner with bees and I want to get started with the best gums and fixtures. My father had gums with glass on the back side of gum and on the sides of supers, which I thought very convenient. Do you have that kind?

IOWA.

Answer.—The average beekeeper does not

want glass in his hives, except in the one-frame hives, which he uses for observing. Glass along the outer combs cannot give one a definite knowledge of the inner conditions of the hive. Besides, in a year or two the bees will propolize the glass so that you cannot look through it. Better follow the modern way and inspect your hives by using a little smoke and making sure whether they have a queen and sufficient stores. Also make sure that they have no disease of the brood, which you could not ascertain with a glass on the side.

Miscellaneous

1. How early should hives be inspected?
2. If comb is ill-shaped, how remedied?
3. If bees are dead and comb part full of honey, smeared dark or yellow, what to do with it?
4. Will scorched honey kill bees?
5. If any disease, would boiling it make it safe to feed the bees?
6. If comb is partly candied in hive, can bees take care of same?
7. How often through the season should hive be inspected?
8. Last season my first swarms came off June 1; must have been several swarms together; looked like a big calf up in the apple tree. I had a large dish pan and put burlap on, leaving one end to cover over bees. As I could get only about one-fourth of them at a time, they would fly back faster than I could get them down to the hive. I got two hives then 3; got some to going in; then saw another bunch in small pear tree, and I did my best for about 3 or 4 hours to live them, and managed to save one small swarm out of the whole lot. What might have been the trouble? I had 2 swarms leave after giving them a frame of brood. I used full sheets of foundation.

PENNSYLVANIA.

- Answers.—1. Inspect them as soon as warm days come. Clean and close down the dead colonies. Feed those that are short.
2. Ill-shaped combs should be taken out and straightened, fastening them in proper position with braces of wire, wood or even strong twine.
3. See first reply. Use the honey of dead colonies for those that may be short.
4. Scorched honey is never very good, but it is not dangerous to feed bees when they can fly every day. For winter use, it is deadly. There is no need of scorching honey if you heat it (au bain-marie) over water. Ask your cook how that is done.
5. Yes, boiling the honey or raising it to boiling point of water will kill germs of disease in about 30 minutes.
6. Bees use granulated or candied honey readily.
7. Inspect them as often as you think they need something. Four inspections a year would be rather too scanty. Twenty would probably be more than needed.
8. The best way to gather a swarm, where you cannot cut the limb on which they cluster, is to present them a comb, dry or full of brood. They will quickly crawl upon it, and you can then put them wherever you want. Your runaway swarms were probably secondary swarms with virgin queens. A new swarm with good queen rarely leaves the hive in which it is put, if the hive is not left to too much sun exposure.

Foulbrood—Robbing

1. I have about 30 colonies of bees in 2-story hives. On account of inconveniences, I was delayed in taking their honey last fall until too late. Now the bees are located in the upper story with brood. Would it be O. K. to put bottom story on top, placing top story on the bottom?
2. I have one hive with American foulbrood. One afternoon I found bees were robbing the hive. I expect to find more foulbrood, but how shall I look for it?
3. When bees are robbing, do the robbers come from one hive, or do they come from numerous hives?
4. If the bees which did the robbing came

from one hive I will expect to find foulbrood in that hive. But will I find the foulbrood in the other hives?

5. What is the quickest and surest plan to combat the disease?

6. If I find both upper and lower story filled with healthy brood, would it be O. K. to confine queen in the lower story, separate the two, place another supply of full depth frames and foundation between the two? I presume they would draw the foundation in this way and prevent sagging of foundations.

ILLINOIS.

Answers.—The fact that the bees are now in the upper stories with brood indicates that you did not leave them too much honey. It will be all right to exchange the stories as you suggest, as soon as they become strong enough to take care of the space above them.

2. Open the hives, using a little smoke, and look for dead brood in the frames among the newly hatched larvae.

3. Robbers may come from one hive or from a dozen. Usually, however, the robbing is done by one or two hives only.

4. You may find the disease pretty well scattered in your colonies. Examine them carefully. Some people get discouraged when they see foulbrood. But we have made larger crops from our bees after we found ourselves compelled to fight foulbrood than we ever did before.

5. For the treatment of foulbrood, you had better buy a text book, or write to the Department of Agriculture, Bureau of Entomology, Washington, D. C., for a Bulletin on the treatment of bee diseases. They have them for your use, and mine, too. It takes too much space in the Question and Answer Department to reply fully to this question.

6. Yes; but why confine the queen to the lower story before the honey crop is on? You had best let her raise all the brood she can before the crop.

Foulbrood—Clipping Queens' Wings—Labeling Honeydew—Stretching of Combs

1. In localities where foulbrood exists bees frequently "rob out" infected colonies located in walls of houses, trees or neglected apiaries, therefore may not infected honey be stored in supers and be extracted before discovery? Would not the disease then be spread if the combs were placed on other colonies, (a) while wet, or, (b) the following season, though dry and clean?

2. On page 96, American Bee Journal, we read: "The only benefit in clipping the queen's wings is the prevention of her escape with a swarm." If one wishes to supersede all queens at, say two years of age, also to breed from queens showing the best records, would not clipping their wings be a benefit, enabling the apiarist to know if any queen had been superseded by natural impulse?

3. Should honey containing honeydew be labeled pure honey? Is it legal to so label it?

4. Do not combs in 1 1/4-inch depth frames give more trouble from stretching near top bar than those in 9/16-inch frames?

COLORADO.

Answers.—Yes, in both cases. In fact that is probably the way in which American foulbrood has spread. European foulbrood appears to be much less dangerous in this respect.

2. Yes, clipping will enable one to know whether she is still the same queen.

3. Neither honeydew nor fruit juices should be sold as good honey. Better mark the goods by their real name.

4. We have had no more trouble from the deeper combs than from the shallow ones. Much depends upon the wiring.

Increase—Re-Queening

1. Do you think the plan you give for increase on page 248 of "Fifty Years Among the Bees," as good as any of the other plans given therein? Will the queens be as good as those of any of your other plans?

2. How long should a colony be queenless before giving them a frame of brood containing a ripe queen-cell unprotected?

3. Can I put the nursery containing queen-cells in a colony having a laying queen?

4. Will the bees care for the cells?

5. Would you advise me to get a breeding queen, or to use what I think the best I have? Mine are mostly Italians, and I think I have some good ones.

ILLINOIS.

Answers.—1. As a rule, what is the best thing to do depends on circumstances. The fact that 9 weak colonies were built up into 56 good ones is proof that the plan was good, and under the circumstances probably no other plan would have been better. The young queens, being of best stock and reared in a strong colony with abundance of nectar coming in, should be of the best.

2. Twenty-four hours would be well.

3. Yes.

4. No; the bees would likely want to destroy the cells, but the nursery is supposed to protect them.

5. Use the best you have, unless you are pretty sure you can get something better.

Running for Extracted Honey

1. I have 40 stands of bees in 8 and 10-frame hives that I have been running for comb honey and this year I am changing to extracted honey. I am going to use the shallow extracting super, wired, and with full sheets of foundation. Now will it be necessary to put a queen excluder between the super and hive body or not?

2. What size extractor should I get if I intend keeping about 100 stands right along?

3. How many frames should I place in the supers for surplus?

4. Would it be best to place the hives in the shade, or in the sun, to get the most surplus?

IOWA.

Answers.—Yes, with the 8-frame. Not so necessary with the 10-frame.

2. Better get a 4-frame, but a 2-frame will do.

3. Put in one frame less than in the hive body.

4. Either way will do. We prefer to have them in the shade.

Starting With Bees

1. I am just a beginner and have only 8 swarms and don't know much about them. What should I do when I take them out of the cellar? Should I open the hives and see how much honey they have?

2. Should I give them two bodies?

3. I've bought a lot of new hives and am going to put full foundations in all the frames. How should I give them to the bees?

4. I see you say not to put a new swarm in a hive with all full sheets of foundation in the hive. Should we put the bees in first and then the frames with the foundation?

WISCONSIN.

Answers.—1. Take them out a warm day. Better not open the hives the first day, as they are more or less bewildered and may go to robbing. If they do not have enough, feed them.

2. No, not early in spring. Wait till they need more room.

3. Yes, put foundation in the frames ahead of need.

4. You can do one of two or three ways. Put two or three sheets of foundation in the body of the hive by removing some of the outer frames that have no brood. Or you can put a second story with foundation in the frames as soon as the crop opens, if the hives are strong. Or, when your bees swarm you can give them one or two combs from the mother colony and put frames of foundation in it in exchange. But don't put a swarm in a hive without frames and guides for the bees to follow.

Getting Bees Out of a House

I have a swarm of bees in a house, but can't get them out. I have an idea to put a hive close to the entrance with full sheets of foun-

dition and a brood comb with honey. On some warm day in May I will put a bee escape over the hole. Do you think this will be a good plan? Should they be supplied with a queen? Should the queen in the old hive be killed in about 60 days after I put the bee escape on?

NEBRASKA.

Answer.—Your plan will not work. You would get only the field bees, and this would deprive the colony of its resources without getting the principal nest, the combs, brood, queen and young bees.

If the colony is in a frame house, you should be able to get to the combs by taking off a few weather-boards. Then you could probably smoke the bees and queen out and have them just like a swarm. Then the combs could be cut out and transferred as has often been explained in these columns. In this way you might get a valuable colony without too much trouble. Putting the hive, in which you transfer them, close to the present location, and shutting all means of getting back to the house lining would control them. Then you could move them to another spot, by giving them a good smoking and drumming, some morning early, and placing them in the selected spot, with a slanting board in front of the entrance, so they might know they are in another spot, before flying away to the fields. Do all this when the weather is warm enough for them to fly.

Control Diseases

I see they claim, in their advertisement of aluminum honey comb, control of all diseases. Please tell us how they do it, through your question department.

MINNESOTA.

Answer.—By boiling it out. If it is done carefully, the metal comb is still retained. This refers to diseases in which it is necessary to destroy the contents of the combs, such as American foulbrood.

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See Atwater's classified honey adv't.

QUEENS, ITALIAN QUEENS—I will have about 100 untested queens a month surplus, for June, July and August. Who wants them at \$1 each? Less than 100, \$1.25 each.
W. H. Moses, Lane City, Texas.

FOR SALE—Italian queens, three-band, untested \$1.50 each; 6, \$7.50; 12, \$14. Tested queens, \$3 each.
Rob't B. Spicer, Wharton, N. J.

FOR SALE—Untested golden Italian queens, \$1.25 each. Tested, \$2.50 each. Satisfaction guaranteed.
J. F. Michael,
Winchester, Ind., R. 1.

FOR SALE—Nuclei, two-frame, with Italian queen, \$6 till June 15. L. A. Schwob,
3630 S. Jefferson Ave., St. Louis, Mo.

BOZZALLA LIGURIAN QUEENS—Obtain your queens from Italy. We take the risk of death in the mail. Select tested Italian queens posted direct from Enrico Bozzalla's apiaries to the customer, \$3.50 each. Remit to sole agent, H. M. Stich, Riccartbar Ave., Paisley, Scotland.

FOR SALE—If you need queens by return mail, I can furnish them from the very best honey gathering strain. They are the three-banded, leather colored; \$1.50 each, or \$15 per dozen; tested, \$2 each. You can buy cheaper queens elsewhere, but you cannot get better queens anywhere. Delivery and satisfaction guaranteed.
Jasper Knight, Hayneville, Ala.

FOR SALE—Italian queens at \$10 per doz., per 100, \$70. Irish Bros., Doctortown, Ga.

FOR SALE—Simmons' queens, goldens and three-bands, bred from prize winners. Also nucleus.
Allen Simmons, Claverack, N. Y.

FOR SALE—3-banded Dr. Miller and Walker's queens after June 10. (Am booked full until then.) \$1.25 each, 6 for \$7, 12 for \$13; selects, 25c each higher.
Curd Walker, Jellico, Tenn., R. 1, Box 18.

SWARTS' Golden queens produce golden bees of the highest quality. Untested \$1.25 each, 6 for \$7; tested, \$2.50. Satisfaction guaranteed.
D. L. Swarts,
Lancaster, Ohio, Rt. 2.

FOR SALE—Nuclei of Italian bees with 1919 queens, 2-frame nucleus, \$5.50; 3-frame, \$6.75; nuclei without queens, 2-frame \$4; 3-frame, \$5.25. Can ship immediately.
Frank Bornhoffer, Rt. 17, Box 200-c,
Mt. Washington, Hamilton Co., Ohio.

FOR SALE—My famous three-banded Italian queens, \$1.25 each, six for \$7, from June 1 to November. J. W. Romberger, Apiarist,
3113 Locust St., St. Joseph, Mo.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, \$1.50 each; six for \$8. Tested, \$2 each. Select tested, \$2.50 each. Virgins \$1. Nuclei for sale.
Prof. W. A. Matheny, Ohio University,
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QUEENS—Italian queens of excellent stock will be ready to mail June 1. Untested, \$1.50 each; 6, \$7.50; 12, \$14.
J. D. Harrah, R. No. 1, Freewater, Ore.

FOR SALE—Hardy northern bred Italian queens, untested, \$1.50 each; tested, \$2.50 each. Bees, 1-lb., \$2.50. Write for quantity prices. Early delivery.
Clifton Smith, Salesville, Ohio.

FOR SALE—Hardy northern bred Italian queens, untested, \$2 each, 6 for \$11, May 15 to July 15. Select tested, \$3, after June 1.
Dr. C. E. Sheldon, Coeur D'Alene, Idaho.

FOR SALE—Italian queens that will give results; untested, \$2; tested, \$3; breeders, \$10.
A. Beyer, Krotz Springs, La.

TRYING IS KNOWING—I can tell you a lot of facts about Victor's Italian queens. I can tell you that they have all the good qualities that queen breeders ever claimed for their queens. But what of that? You can't know until you try it for yourself. Mated, \$1.25 each; six, \$7; twelve, \$13.50, from June 1 to October 1. Julius Victor, Martinsville, N. Y.

FOR SALE—Italian queens. Prices for untested, in June, \$1.50 each, \$2.25 for six, \$16 for twelve; tested, \$2.50 each from July 1 to October 1; untested, \$1.25 each, \$7 for six, \$13.50 for twelve; tested, \$2 each; Virgins, 75c each. Mismatched queens will be replaced if returned in 30 days. Dead queens will be replaced if returned to me by return mail.
R. B. Grout, Jamaica, Vt.

FOR SALE—I. F. Miller's strain Italian queen bees. Northern bred for business from my best superior breeders; gentle, roll honey in, hardy, winter well, not inclined to swarm, 3-banded. Queens a specialty; 26 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, \$1.40; 2, \$3.75; 6, \$7; 12, \$13. select untested, \$1.65; 3, \$4.50; 6, \$8.50; 12, \$16.
I. F. Miller, Brookville, Pa., R. 2.

FOR SALE—Hardy Italian queens, \$1 each
W. G. Lauer, Middletown, Pa.

FOR SALE—Three-banded Italian queens, ready June 10. Untested only, 1, \$1.50; 6, \$8; doz., \$15. Book orders now.
Ross B. Scott, Rt. No. 4, La Grange, Ind.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, \$1.25; fifty untested, \$57.50; one hundred untested, \$100. Orders filled in rotation; first deliveries March 1, 1920.
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A. W. Yates,
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FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, \$1.25 each; 6, \$6.50; 12, \$12. Select untested, \$1.50 each; 6, \$9; 12, \$18. Tested, \$2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.
W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, \$1.25; 6, \$6.50; 12, \$12; 50, \$47.50; 100, \$90. Your correspondence will receive prompt attention, and I guarantee satisfaction.
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A. J. Pinard, Morgan Hill, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, \$1.50 each, \$15 per doz.; tested, \$2.00 each, \$22 per doz. One-frame nuclei, \$3; two-frame, \$5; three-frame \$6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.
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FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you.
The Deroy Taylor Co.,
Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax.
E. B. Ross, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
304 Walnut St., Cincinnati, Ohio.

WANTED—Comb and extracted honey.
The L. H. Snider Apiaries, Auburn, Ind.

FOR SALE

See Atwater's classified honey adv't.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Waa.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange.
F. Eric Millen,
O. A. C., Guelph, Ontario, Canada.

FOR SALE—Bee supply business, including equipped mill for the manufacture of bee hives; also a small warehouse and 80-colony apiary. This is a splendid opportunity for the right party. The business is well established and profitable, but owing to reasons which will be fully explained, I desire to retire. Don't answer this add unless you mean business and have or can command a few thousand dollars. Address, A. E. Burdick, Sunnyside, Wash.

WANTED

See Atwater's classified honey adv't.

WANTED—Honey, in 5 or 10-lb. cans.
Lang, 1609 Dayton St., Chicago.

WANTED—One honey extractor. State particulars in first letter.
P. C. Forgard, Lake Preston, S. D.

WANTED—Beeswax The L. D. Caulk Co.,
Milford, Delaware.

WANTED—Honey—50,000 lbs. bulk comb and extracted 1920 crop, produced and packed according to my instructions and specifications in containers furnished by me. Write today for instructions and contract blank.
W. A. Hunter, Terre Haute, Ind.

WANTED—Beeswax. At present we pay 40 cents per pound in cash and 42 cents in trade for clean, yellow wax, delivered Denver.
The Colorado Honey Producers' Association,
Denver, Colo.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work.
Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Undamaged copies of February, 1920 American Bee Journal. Will pay 10c a piece. When mailing wrap so the entire copy is covered.
American Bee Journal,
Hamilton, Ill.

WANTED—Extracted honey in white and amber grades. State lowest price; how packed. Send sample.
Harmony Bee & Honey Co.,
White Bear Lake, Minn.

SITUATIONS

See Atwater's classified honey adv't.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.
W. A. Latshaw Co., Clarion, Mich.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries.
The Rocky Mountain Bee Co.,
Box 1310, Billings, Mont.

WANTED—One or two good queen-rearing men to begin work February 15, 1920.
Nueces County Apiaries, Calallen, Texas.

SUPPLIES

See Atwater's classified honey adv't.

FOR SALE—50 8-frame comb-honey supers, dovetailed and painted, at 55c each.
A. De Koker, Jr., Thayer, Ind., R. 1.

FOR SALE—80 two-story ten-frame hives, nailed and painted, metal cover, frames nailed and wired. New hives, 5, \$25, used one season, 5, \$21.50. 100 ten-frame bodies, K. D., 5, \$4 1,000 frames, K. D., 100, \$4.25; 200 lbs. medium brood foundation, 10 lbs, 75c; 50 lbs., 70c; 50 new wood and 7 wire excluders, 5 for \$3.75; 30 cases of two 5-gallon cans, per case, 60c, f. o. b. Watertown, Minn. 265 cases 15-oz. glass jars in paper cases, 10 cases, \$14; 25 cases, \$34, f. o. b. Des Moines, Iowa.
C. E. Lustman, Watertown, Minn.

For Sale—200 hives with covers and bottom boards, 8 and 10-frame 75 with full drawn out frames (Hoffman); 50 honey cases, 25 summer stands, 400 supers, 50 for extracting, with drawn out foundation; 200 Hoffman frames in flat; 50 5-gallon honey cans, new; 50 Page feeders, 1 Doolittle wax extractor, 1,000 extra fence separators, 25 drone and queen traps, 50 wood-wire honey boards, 50 zinc honey boards, 2-frame extractor, 1 comb bucket, 50 bee escapes, 2 swarm baskets, 1 50-gallon honey tank, 1 decapping tank, 25 hives of bees, Italian; 5 double-walled hives. All Root goods, some never used, others used one season. Several other goods too numerous to mention. Two thousand dollars' worth for \$700. Must be sold all together.
Charles Hamel,
233 North St., North Adams, Mass.

FOR SALE—Danzonbaker 10-frame shallow extracting supers, new, with frames; will discount.
D. S. Durrall, Hurdland, Mo.

FOR SALE—We make Cypress hives, frames, supers, feeders. Write us for prices. Honey barrels for sale.
Sarasota Bee Co., Sarasota, Fla.

FOR SALE—10-frame dovetailed hives in lots of one to fifty, very cheap.
Wm. Craig, Altin, Minn.

SPECIAL PRICE overstock sale on 1-story, 8-frame S. W. hives. Shipping cases to hold 24 sections $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{4}$ Hoffman frames $1\frac{1}{2}$ -inch spacing. Modified frames, Jumbo depth, $1\frac{1}{2}$ -inch spacing. Ask for quotations.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{4}$ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order.
C. H. WEBER & CO.,
2146 Central Ave., Cincinnati, O.

SEND us a list of goods wanted and we will quote you lowest prices. We are the money-saving house. Price list free. Try us.
H. S. Duby & Son, St. Anne, Ill.

MISCELLANEOUS

See Atwater's classified honey adv't.

IF you know anyone wishing sugar at once, please write me in the meantime.
Edw. A. Winkler, Joliet, Ill.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.
The Deroy Taylor Co., Newark, N. Y.

FOR SALE—Silver Spangled Hamburg eggs and fine cockerels.
Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.
Siberian Fur Farm, Hamilton, Canada.

Good Tires Cheap

6,000 MILES GUARANTEED



Serviceable tires are reconstructed in our factory by our own dependable process and guaranteed for 6,000 miles. Unequalled in price, quality and workmanship.

RELINER FREE WITH EACH TIRE

SIZE	TIRES	TUBES	SIZE	TIRES	TUBES
30x3	5.40	1.50	34x4	8.65	2.50
30x3½	6.40	1.55	34x4½	9.50	2.50
31x3½	6.65	1.75	35x4½	10.50	3.05
32x3½	6.90	1.90	36x4½	11.40	3.30
31x4	7.90	2.15	35x5	12.40	3.40
32x4	8.15	2.30	36x5	12.60	3.65
33x4	8.40	2.40	37x5	12.65	3.65

Tubes Guaranteed Fresh Stock in order—ing state whether S. S., Clincher, plain or non-skid. Take 5 per cent discount from above prices for cash with order, or send \$2 deposit on each tire and \$1 on each tube, balance C. O. D. Tires shipped immediately subject to inspection. ORDER TODAY.
Serviceable Tire Corp., 171 E. 33rd St., Chicago

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We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

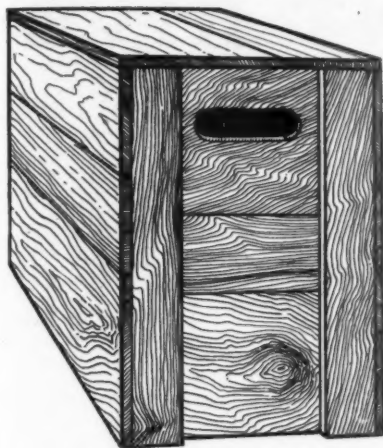
Send Us Your Inquiries
A. H. RUSCH & SON CO.
Reedsville, Wis.

THAGARD'S ITALIAN QUEENS—Bred for Quality

	April 1st to July 1st			July 1st to Oct. 1st		
	1	6	12	1	6	12
Untested	\$1.50	\$ 7.50	\$13.50	\$1.25	\$ 6.00	\$12.00
Select Untested	1.75	9.00	16.00	1.50	8.00	13.00
Tested	2.50	13.00	24.00	2.00	12.00	20.00
Select Tested	5.00	22.00	41.50	3.50	20.00	36.00

V. R. THAGARD, Greenville, Ala.

TIN CANS AND GLASS JARS



Our season's supply of tin cans and glass jars is on hand. We can supply your needs on receipt of your order.

Be forehanded. Freights are slow. Order soon for assurance that your tin cans will reach you in proper time for your needs.

We call your special attention to the accompanying illustration. The cases for two five-gallon cans are of the best. Made of three-eighths inch lumber, with seven-eighths inch heads, and the heads of the boxes are cleated to make the very strongest package possible. We recommend them as being the very best on the market.

Friction top cans in any kind of case you may require, 2½-lb., 5-lb., 10-lb., in cases of 6, 12, 24, 50 and 100.

We handle 6-ounce jelly glasses, 2 dozen to the case.

We also call your special attention to our 16-ounce screw cap jars. A tall package that is a favorite with everyone who has used or seen it. These are packed 2 dozen in a case. We can recommend them most highly.

Write today for our prices on all these cans and jars. They will interest you.

Be sure to ask also for our honey label catalog.

DADANT & SONS, Hamilton, Ill.



THREE BAND ITALIANS TESTED DISEASE RESISTORS

PRICES

	June 15 to July 15			July 15 to Oct. 1			
	1	6	12	1	6	12	100
Untested	\$1.50	\$8.00	\$15.00	\$1.30	\$7.50	\$13.50	\$110.00
Select untested	1.75	9.00	16.00	1.60	8.00	14.00	115.00
Select tested, any time after June 20				3.00	16.00	29.00	
Select day-old virgins, after June 160	3.50	6.50	50.00

D. A. DAVIS, Birmingham, Mich.
216 Greenwood

Read "THE BEEKEEPER"

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick. Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

Price, postpaid, \$1 per year
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Send for a free sample copy

The Horticultural Publishing Co., Ltd., Peterboro, Ontario

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. 25 years a Queen Breeder.

PRICES	Before July 1			After July 1		
	1	6	12	1	6	12
Select untested	\$1.50	\$8.00	\$14.00	\$1.00	\$5.50	\$10
Tested	2.00	10.00	18.00	1.50	8.00	14
Select tested	2.50	14.00	25.00	2.00	10.00	18

BREEDERS—The cream from our entire stock of outyards, \$5 each, usually we can send all queens promptly after June 10th.

Breeders, select tested and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

No bees sold except with breeders, when a two-comb nuclei will be furnished for \$5.

H. G. QUIRIN, Bellevue, O.

QUEENS—FINE ITALIAN—QUEENS

From Selected Bred-up Stock

Now booking orders for June delivery at following prices:

	1	12	100
Untested	\$1.35	\$15.00	\$110.00
Select Untested	1.75	18.00	150.00
Tested	2.50	24.00	200.00

Pure mating, safe arrival and satisfaction guaranteed.

A few more package bees for June delivery.

E. A. HARRIS, Albany, Ala.

QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigreed; need no boosting; they speak for themselves.

CHAS. W. QUINN, Sabot, Va.

BEE SUPPLIES

FALCON LINE

Best goods made. Get our big discount sheet before buying.

C. C. CLEMONS BEE SUPPLY COMPANY

128 Grand Ave.

Kansas City

Mo.

HAND-MOORE QUEENS

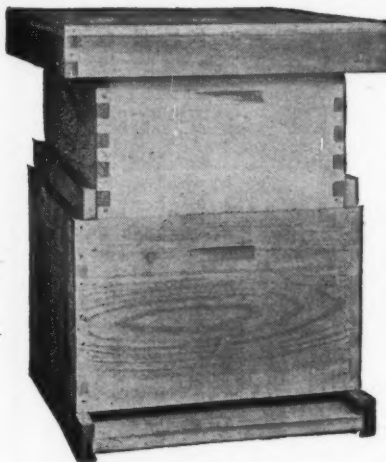
How many of you, let me see, have tested out the Hand-Moore bee? Our bees get honey by the ton, and honeys what brings the mon'. So if you want your honest share, and are not content with just the tare. Buy Hand-Moore queens, that's what I say, and do it, yes, and right away. Untested only, \$2 each.

W. A. LATSHAW CO., Clarion, Mich.

MODIFIED DADANT HIVE

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

Your present brood equipment can be put above the Modified Dadant hive used as full-depth supers.



You get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

You get deep frames, large one-story brood-nest, frame space ventilation, excellence in wintering, swarming easily controlled.

MODIFIED DADANT HIVE FEATURES

1. Eleven frames, Langstroth length, Quinby depth.
2. Frames spaced $1\frac{1}{2}$ inches for swarm control.
3. Extracting frames $6\frac{1}{4}$ inches deep.
4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
5. Langstroth "Standard" equipment easily used with this hive.

For free booklet write any distributor of Lewis "Beeware," or to

G. B. LEWIS COMPANY, Watertown, Wisconsin
DADANT & SONS, Hamilton, Illinois

DO YOU READ

THE DOMESTIC BEEKEEPER

(Successors to the Beekeepers' Review)

Now in its 33rd year; 32 pages; monthly; \$1.00 per year.

We haven't room here to tell you all the reasons why we believe you would find a subscription to the **Beekeeper** a good investment, but we printed some extra copies for April and May and if you will send us 10c (stamps or silver) for a copy of the May number we will mail it promptly and include, free, a copy of the April number. Or send us 50c for the magazine the balance of this year—7 months.

We have some attractive book clubbing offers we would like to tell you about. Let's hear from you **today!**

THE DOMESTIC BEEKEEPER, Almont, Mich.

FLORIDA BEES AND QUEENS

The first part of April I will be fully ready to fill orders for queens and bees as follows: Two-frame nuclei with untested queen, \$6; untested queens, \$1.50 each; tested, \$2. From my long-tested and best Italian stock.

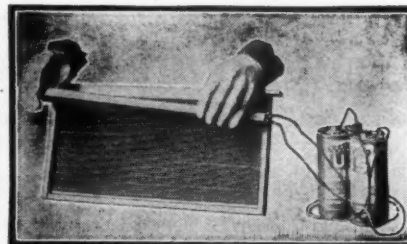
BEEKEEPERS' SUPPLIES—DADANT'S FOUNDATION

A complete stock of everything for the Dixie beekeepers, right here at home. My cypress catalog of cypress hives and hive parts will interest you in prices.

DIXIE BEEKEEPER

This monthly publication tells of Dixie as a bee country and how we are keeping bees here; \$1 a year. Sample copy free.

J. J. WILDER, Waycross, Georgia



ELECTRIC IMBEDDER

Price without Batteries \$1.25

Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

Dadant & Sons, Manufacturers
HAMILTON, ILL.

QUEENS FOR SALE

Golden and 3-band Italians (the kind that fill from 2 to 6 supers). Untested (either kind), \$2 each, \$11 for 6; \$45 for 25. No discount for 50 or 100 lots. Tested, \$3 each, \$16 for 6, \$30 for 12. Full colonies of bees (with queen), \$12 and \$15 each for 8 and 10-frame Root Co., hives, without supers.

MISS LULU GOODWIN,
Mankato, Minn., Box 294.

PRICES OF QUEENS

	Nov. 1 to June 1			June 1 to Nov. 1		
	1	6	12	1	6	12
Untested	\$2.00	\$9.00	\$16.80	\$1.50	\$8.00	\$14.50
Select untested	2.25	10.50	18.00	2.00	9.50	16.00
Tested	3.00	16.50	30.00	2.50	12.00	22.00
Select tested	3.50	19.50	36.00	3.00	16.50	30.00

Breeders \$7.50 to \$15.00

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)".

H. M. TICHENOR, Centertown, Ky.

2058 Yonge St., Toronto Canada March 19, 1920.

Friend Davis:

The colonies headed by your queens are through this far in fine shape. It was a pleasing sight to see them take their first flight (after 4 months) this last week. What is the price of queens to us folks on this side this year, and when could you start to send me up some? A reply would oblige

Yours Respectfully,

P. F. OLIVER.

No Nuclei, Full Colonies or Pound Packages.

BEN G. DAVIS, Spring Hill, Tenn.**MARSHFIELD GOODS****BEEKEEPERS**

We manufacture millions of sections every year that are as good as the best. The **cheapest** for the **quality**; **best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders and shipping cases.**

Our Catalog is free for the asking

MARSHFIELD MFG. CO., Marshfield, Wis.**BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE**

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, **bees are valuable.** We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

AUGUST LOTZ CO., Boyd, Wis.**ITALIAN QUEENS**

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested, \$1.50; 6, \$8; 12, \$15

Tested, \$2.25; 6, \$12; 12, \$22.

Select tested, \$3 each.

Descriptive circular and price list free.

JOHN G. MILLER,

723 C Street, Corpus Christi, Texas.

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**BEE
ESCAPE
SAVES
HONEY
TIME
MONEY**



For sale by all dealers.

If no dealer, write factory

R. & E. C. PORTER, MFRS.

Lowietown, Illinois, U. S. A.

(Please mention Am. Bee Journal when writing)

Send for Catalogue of
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American Bee Journal

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.
NASSAU, CO.**

WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

The Colorado Honey Producers' Association, 1424 Market St.,
Denver, Colo.

Write for Price List and
Booklet descrip-
tive of

**HIGH-GRADE
Italian Queens**

**JAY SMITH
Route 3
Vincennes, Ind.**



HERE THEY ARE MR. BEEKEEPER

at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list: Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with genuine leather bellows; Root's Extractors, all sizes, of hand and power machines; Bee Books, written by all leading authors in bee-dom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

THE DERROY TAYLOR CO., Newark
(Wayne Co.) New York.

BEEKEEPERS ATTENTION

You can make your business more profitable and easier to handle through the proper use of modern equipment: This is supplied in LEWIS BEEWARE by

WESTERN HONEY PRODUCERS
SIOUX CITY, IOWA

SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B

ROOT QUEENS

	June	July to Oct. 1
Untested.....	\$2.50	\$2.00
Select Untested.....	3.00	2.50

QUANTITY DISCOUNTS

12 Queens	10% Discount
25 "	15% "
50 "	20% "
100 "	25% "

THE A. I. ROOT COMPANY, Medina, Ohio, U. S. A.

QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

Prices of Queens

	May 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested.....	\$2.00	\$ 9.00	\$16.80	\$1.50	\$ 8.50	\$14.50	\$1.30	\$ 7.50	\$13.50
Select Untested.....	2.25	10.50	18.00	2.00	9.50	16.00	1.75	8.50	15.00
Tested.....	3.00	16.50	30.00	2.50	12.00	22.00	2.00	10.00	18.50
Select Tested.....	3.50	19.50	36.00	3.00	16.50	30.00	2.75	15.00	27.00

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

HARDIN S. FOSTER, Columbia, Tenn.

Crop and Market Report

Compiled by M. G. Dadant

NET LOSS AND CONDITIONS

It is remarkable to note throughout the whole country the heavy loss of bees during the past year. This, of course, is owing to the extremely prolonged cold winter and prolonged spring cold. The winter losses have been augmented by a very large spring loss through weakening queens and through starvation.

Throughout the whole eastern half of the country north of the Ohio River and east of the Mississippi, losses seem to be very heavy. In the New England States they will run nearly 50 per cent, in Pennsylvania and New Jersey and New York the loss will be from 20 to 40 per cent and throughout the rest of the northeast, probably from 5 to 15 per cent, depending upon condition of bees in the fall and upon method of wintering. Of course, the beekeepers who protected their bees in the best manner will have the smallest loss.

Throughout the southeast the losses are small, ranging from 4 to 10 per cent, while Texas reports a loss of from 5 to 15 per cent, with an average of not over 10 per cent. The north half of the Rocky Mountain territory reports loss of from 10 to 35 per cent, whereas southern Colorado, Arizona and New Mexico will not have much over 5 per cent loss. Wyoming and Nevada and Utah also have heavy loss, probably averaging 25 per cent, as will Washington and Oregon. The loss in California is considerably less, probably not averaging over 7 or 8 per cent.

PLANTS AND PROSPECTS

Throughout the New England States where bees are in poorest condition, prospects are best. New York and Pennsylvania report very fair prospects. Ohio has only a fair prospect, while Indiana and Illinois clover was greatly injured by last year's drought. Michigan is in almost the same shape, except that she has other honey sources outside of clover. Wisconsin and Minnesota seem to be much improved over last year. In Kansas and Nebraska prospects are fair, although very late, and South Dakota seems very good. Western Iowa will have a very good crop, weather permitting, whereas eastern Iowa, like Illinois, was burned out too late last year to permit of a good clover crop.

The bees in the South are already harvesting honey and expectations are for an average crop there. Texas, fortunately, reports much above the average, and some reports are that there will be the largest crop for a long time. Mesquite flow is on and prospects for both mesquite and horsemint seem very good, indeed.

In California some report normal crops this year while others say there will not be over 50 per cent of normal. It is very probable however, that weather conditions permitting, southern California will have at least as good a crop as last year, while northern California may not equal last year's percentage.

HONEY—SALE

There is very little honey left on hand to compete with the new crop. In fact, throughout practically the whole country the honey crop has left the hands of the producer and is in the hands of the wholesaler.

The whole northeast section reports no honey on hand, except in the large centers and a few scattering lots on hand in the southeast and in the Rocky Mountain regions. The three large co-operative associations of the West and Southwest have no honey left except what little new crop is coming in to the Texas and California exchanges. This is being sold readily.

In the larger markets there is still a little honey on hand, but in heavy demand owing to the sugar shortage. One commission merchant in New York City reports thirty carloads of Idaho honey for sale at a price of 23c f. o. b. New York.

Besides these reports of new honey from Georgia and Florida selling at from 12½ to 14c for No. 2, with 17c for No. 1 honey. This they say is the highest prices they have gotten in the last twelve months. West Indian and Cuban honey is coming in to the New York market at a price ranging from 12 to 16c, according to quality.

We should not lose sight of the sugar markets in basing any ideas as to what the honey price will be for the coming season. Sugar futures have been rising practically every day during the last three or four weeks and the wholesale price of sugar is now quoted at from 20 to 28c per pound. Sugar is selling locally at 32c per pound from retail stores.

Reliable sources report that there is not much danger of the sugar price dropping to amount to anything for the next six or eight months. In fact sugar futures would indicate that the price will hold good up until December or January. It is doubtful, therefore, whether the price of honey will be any lower than it is at present, which would indicate a good demand and a rising market.

Orange honey is selling in the California markets at about 20c per pound. Some are holding for 22c.

The new Texas honey is selling at about 22c for extracted and 24c for bulk comb, for a limited quantity which has just been placed upon the market.

"falcon"

**BEES PENNED
UP UNDER BIG
SNOW DRIFTS**

Keepers Haven't Seen Them
For Couple of
Months.

MAY BE STARVED

Scarcity of Sugar Another Prob-
lem—No Reduction in
Honey Price.

Bees keepers certainly have their
troubles, hive owners indicated at a
meeting of the National Association of
Bee Keepers at the Staller this morn-

ing delegates to the con-
ference held each
year in Buffalo.

Bee insurance

"falcon" bee supplies are an assurance of the right start towards success for your colonies this summer, just as they are insurance against the severest winter weather.

For over forty years, the most exacting beekeepers, both in this and other countries, have been protected by the high quality of "falcon" supplies.

Behind every queen, hive, super or pound of foundation we sell stands our guarantee of "absolute satisfaction or money back."

Send at once for our red catalog—order from it

W. T. FALCONER MFG. CO.
FALCONER, N. Y.

Where the best Bee-Hives come from

Mr. Honey Producer:

Our business means more to us than simply selling supplies. Goods that make good, and a *Service* that really *Serves*, that's what we have to offer you, and as never before you are needing these two things today.

You know what you need. Tell us about it,---we will *serve* you if we can, but if we haven't what you want, and can't get it for you, we will tell you so frankly. It's a hundred to one that we have anything you need at this time. Your request brings it hurrying along, over the shortest possible route, in shortest possible time.

May we *serve* you?

Very truly yours,

THE A. I. ROOT CO. OF IOWA
COUNCIL BLUFFS, IOWA



CHARLES MONDENG
Bee Keepers' Supply Mfg. Plant.

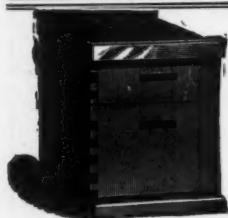
BEE SUPPLIES

The largest and oldest Bee Supply manufacturer in Minnesota can offer you BEE WARE that will keep that "satisfied smile" on your face. Excellent quotations given on frames, spacing or unspacing. Write to MONDENG about hives and supers. Made of polished white pine.

A word to the wise is usually—RESENTED?
Send for my 1920 Catalog and Price List.
LOOK for the best bargains I've presented.

Will take your Beeswax in Trade at Highest Market Price

CHAS. MONDENG
159 Cedar Lake Road MINNEAPOLIS, MINN.



EARLY ORDER DISCOUNTS WILL
Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

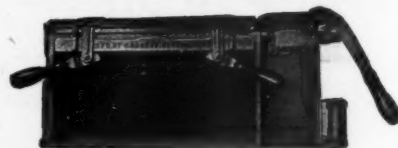
LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.
or J. W. ROUSE, Mexico, Mo.

BARNES' Foot Power Machinery

Read what J. E. Rarent, of Chariton, N. Y., says: We cut with one of your Combined Machines last winter 60 chaff hives with 7-in. cap, 100 honey-racks, 600 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.



W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS



PAT. JULY 30, 1918

C.O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE \$7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

Established 1885

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

JOHN NEBEL & SON SUPPLY CO.
High Hill, Montg. Co., Mo.

Lumber that Lasts?



Here's a Convincing Case of an Experienced Beekeeper who —

(But let the gentleman tell it himself:)



BUCK GROVE, IOWA, February 2, 1916.
 "I have been a Cypress man for 10, these many moons. Almost all my dovetail hives are of Cypress, as are bottom-boards, and I think, shallow telescope covers. My hive stands are of Cypress, and stand in the mud and wet all the time and are as solid as when I got the first one some years ago. Cypress is a trifle heavier than white (cork) pine, but not much more than the heavier grade of pine now used. The fact that it is 'everlasting' compensates for all this." (Signed) A. F. BONNEY, M. D.

For a job of repairing or for equipment, the lumber that will give you the greatest real investment value in the market is Cypress, commonly known as the "Wood Eternal." This wood does not rot down like most woods; it lasts and lasts and LASTS, and LASTS and LASTS. It is the Gopher Wood of the Bible—Noah built his ark of Cypress. Since the days of Noah, Cypress has been famous for endurance under the most trying conditions. **Cypress is the one certified Greenhouse wood. That's "some" test. Bottom-boards are another.**

GET A BOOK—IT IS FREE

There are 42 volumes in the internationally famous Cypress Pocket Library, and each is authoritative in its field, and all are FREE. Vol. 1 is the U. S. Gov't Report on Cypress—that is a good authority, surely. Vol. 4 is the Barn Book, with plans and specifications for building. Vol. 36 is the Carpentry Book, making easy a dozen hard jobs of carpentry. Vol. 19 is the Canoe and Boat Book. Vol. 37 is the Silo Book. All are free for the asking. Suppose you ask for one or a dozen, right away.

WORTH INVESTIGATING

This Cypress wood matter is worth investigating. Just write our "All-round Helps Department."

SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION

1251 HEARD NATIONAL BANK BUILDING, JACKSONVILLE, FLA.

1251 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

FOR QUICK SERVICE, ADDRESS NEAREST POST OFFICE

FOREHAND'S THREE BANDS

THE THRIFTY KIND

Twenty-eight years of select breeding brings these bees up to a standard surpassed by none, but superior to many.

Place your order now for June delivery of queens. We have booked as many orders for pound bees as we can handle this season.

PRICES AFTER JUNE 1

	1	6	12	100 Each
Untested	\$1.50	\$ 7.50	\$13.50	\$1.00
Select Untested	1.75	9.00	16.50	1.25
Tested	2.50	13.00	24.50	2.00
Select Tested	4.00	22.00	41.50	3.35

No reduction in prices after July 1 as stated in circular.

W. J. FOREHAND & SONS, The Bee Men
 Fort Deposit, Alabama

CONFIDENCE

Riverton, Wyo., Jan. 31, 1920

The A. I. Root Company,
Medina, Ohio

Gentlemen:

I am writing you regarding the coming crop of honey. I feel that I am entitled to a first chance to sell you my crop, for I buy almost everything I use in my business in the bee line of you. I will ship you my entire crop of honey at the market price or a price we agree upon. I have 1,000 colonies, and if I have a fair crop I should have from 100,000 to 150,000 lbs.

There is one other reason I am writing you at this date, and that is I am counting on being up in Alaska and Yukon territory when my crop of honey is being harvested, and I feel that I can absolutely trust The A. I. Root Company for fair dealing and honesty whether I am in Alaska or at home.

Yours truly,
B. M. CARAWAY

THE A. I. ROOT COMPANY
MEDINA, OHIO